

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of
David S. TERMAN

Serial No.: 09/751/708

Group Art Unit: 1635

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Examiner:

For: COMPOSITIONS AND METHODS FOR TREATMENT OF NEOPLASTIC
DISEASE

STATEMENT IN ACCORDANCE WITH 37 CFR 1.821 (f)

Assistant Commissioner for Patents
Washington, D.C. 20231
BOX SEQUENCE

Sir:

I hereby state that the information recorded in computer readable form is identical to the written (paper) sequence listing.

Respectfully submitted,

Date

2/26/02


David S. Terman



7

SEQUENCE LISTING <110> TERMAN, David S <120>
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<140> US 09/870,759 <141> 2001-05-30 <150> US 60/208,128
<151> 2000-05-30 <160> 166 <170> PatentIn version 3.1 <210> 1
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PDB ID: 1A72

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Fasta sequence of Staphylococcus aureus

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Val Lys Ser Val Asp Lys Phe Leu Ala His Asp Leu Ile Tyr Asn Ile			
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DEPARTMENT OF GOVERNMENT

225

230

235

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180 185 190

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175 180 185	
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Asn Tyr Asp Leu Phe Gly Ala Gln Gly Gln Asn Ser Asn Thr Leu Leu	
220 225 230	
aga ata tat aga gat aat aaa acg att aac tct gaa aac atg cat att	1011
Arg Ile Tyr Arg Asp Asn Lys Thr Ile Asn Ser Glu Asn Met His Ile	
235 240 245 250	
gat ata tat tta tat aca agt taaacatggt agtttgaac acgtaatgtt	1062
Asp Ile Tyr Leu Tyr Thr Ser	
255	
cagattatta tgaaccgaga ataatctgaa agtttacaag cagtaaaaaa agtatatgtg	1122
ctataatatg ctttgagcaa gttggataga tgggtggctat ctgagtataa ggaggtggtg	1182
cctatggtgg cattactgaa atcttttagaa aggagacgcc taatgattac aattagtacc	1242
aatgttgcag ttgggttat tccttattgc attgataggt ctagtaatca agcttattga	1302

tcgccttatg aaacggata tattaaatggatagaaaatg agaatagctt ttggatgac	720
atgatgcctg caccaggaga taaatttgac caatctaaat atttaatgtatgtacaatgac	780
aataaaatgg ttgattctaa agatgtgaag attgaagttt atcttacgac aaagaaaaag	840
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atatatgtat gtataagtaa ataatgataa ttctataatt attgtatata actaataatt	180
acttcgacaa aaataatcta ttatccaaat atttagata ataaaaagtt tggatgaaat	240
tatgcttag aggtgagcaa a atg aaa aca gca ttt ata cta ctt tta	291
Met Lys Lys Thr Ala Phe Ile Leu Leu Leu	
1 5 10	
ttc att gcc cta acg tgg aca aca agt cca ctt gta aat ggt agc gag	339
Phe Ile Ala Leu Thr Trp Thr Ser Pro Leu Val Asn Gly Ser Glu	
15 20 25	
aaa agc gaa gaa ata aat gaa aaa gat ttg cga aaa aag tct gaa ttg	387
Lys Ser Glu Glu Ile Asn Glu Lys Asp Leu Arg Lys Ser Glu Leu	
30 35 40	
cag gga gca gct tta ggc aat ctt aaa caa atc tat tat tac aat gaa	435
Gln Gly Ala Ala Leu Gly Asn Leu Lys Gln Ile Tyr Tyr Tyr Asn Glu	
45 50 55	

65	70	75	80
Ser Ile Ser Leu Ile Ile Phe Pro Ser Pro Tyr Tyr Ser Pro Ala Phe			
85		90	95
Thr Lys Gly Glu Lys Val Asp Leu Asn Thr Lys Arg Thr Lys Lys Ser			
100		105	110
Gln His Thr Ser Glu Gly Thr Tyr Ile His Phe Gln Ile Ser Gly Val			
115		120	125
Thr Asn Thr Glu Lys Leu Pro Thr Pro Ile Glu Leu Pro Leu Lys Val			
130		135	140
Lys Val His Gly Lys Asp Ser Pro Leu Lys Tyr Gly Pro Lys Phe Asp			
145		150	155
Lys Lys Gln Leu Ala Ile Ser Thr Leu Asp Phe Glu Ile Arg His Gln			
165		170	175
Leu Thr Gln Ile His Gly Leu Tyr Arg Ser Ser Asp Lys Thr Gly Gly			
180		185	190
Tyr Trp Lys Ile Thr Met Asn Asp Gly Ser Thr Tyr Gln Ser Asp Leu			
195		200	205
Ser Lys Lys Phe Glu Tyr Asn Thr Glu Lys Pro Pro Ile Asn Ile Asp			
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Met Glu Asn Asn Lys Glu Val Leu Lys Lys Met 1 5 10			
gta ttt ttt gtt tta atg aaa ttt ctt gga cta aca atc ttg cca aaa 159			
Val Phe Phe Val Leu Met Lys Phe Leu Gly Leu Thr Ile Leu Pro Lys 15 20 25			
ggt att tgt tca aca aga ccc aag ccc agc caa tta caa aga tct aat 207			
Gly Ile Cys Ser Thr Arg Pro Lys Pro Ser Gln Leu Gln Arg Ser Asn 30 35 40			

80	85	90	
agc cct gct ttt aca aaa ggg gaa aaa gtt gac tta aac aca aaa aga Ser Pro Ala Phe Thr Lys Gly Glu Lys Val Asp Leu Asn Thr Lys Arg 95	100	105	339
act aaa aaa agc caa cat act agc gaa gga act tat atc cat ttc caa Thr Lys Ser Gln His Thr Ser Glu Gly Thr Tyr Ile His Phe Gln 110	115	120	387
ata agt ggc gtt aca aat act gaa aaa tta cct act cca ata gaa cta Ile Ser Gly Val Thr Asn Thr Glu Lys Leu Pro Thr Pro Ile Glu Leu 125	130	135	435
cct tta aaa gtt aag gtt cat ggt aaa gat agc ccc tta aag tat ggg Pro Leu Lys Val Lys Val His Gly Lys Asp Ser Pro Leu Lys Tyr Gly 145	150	155	483
cca aag ttc gat aaa aaa caa tta gct ata tca act tta gac ttt gaa Pro Lys Phe Asp Lys Lys Gln Leu Ala Ile Ser Thr Leu Asp Phe Glu 160	165	170	531
att cgt cat cag cta act caa ata cat gga tta tat cgt tca agc gat Ile Arg His Gln Leu Thr Gln Ile His Gly Leu Tyr Arg Ser Ser Asp 175	180	185	579
aaa acg ggt ggt tat tgg aaa ata aca atg aat gac gga tcc aca tat Lys Thr Gly Gly Tyr Trp Lys Ile Thr Met Asn Asp Gly Ser Thr Tyr 190	195	200	627
caa agt gat tta tct aaa aag ttt gaa tac aat act gaa aaa cca cct Gln Ser Asp Leu Ser Lys Lys Phe Glu Tyr Asn Thr Glu Lys Pro Pro 205	210	215	675
ata aat att gat gaa ata aaa act ata gaa gca gaa att aat taa Ile Asn Ile Asp Glu Ile Lys Thr Ile Glu Ala Glu Ile Asn 225	230		720
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Gln Ile Ile Lys Thr Ala Lys Ala Ser Thr Asn Asp Asn Ile Lys Asp 35 40 45			
Leu Leu Asp Trp Tyr Ser Ser Gly Ser Asp Thr Phe Thr Asn Ser Glu 50 55 60			
Val Leu Asp Asn Ser Leu Gly Ser Met Arg Ile Lys Asn Thr Asp Gly			

Ala Cys Met Tyr Gly Gly Val Thr Leu His Asp Asn Asn Arg Leu Thr
130 135 140

Glu Glu Lys Lys Val Pro Ile Asn Leu Trp Ile Asp Gly Lys Gln Thr
145 150 155 160

Thr Val Pro Ile Asp Lys Val Lys Thr Ser Lys Lys Glu Val Thr Val
165 170 175

Gln Glu Leu Asp Leu Gln Ala Arg His Tyr Leu His Gly Lys Phe Gly
180 185 190

Leu Tyr Asn Ser Asp Ser Phe Gly Gly Lys Val Gln Arg Gly Leu Ile
195 200 205

Val Phe His Ser Ser Glu Gly Ser Thr Val Ser Tyr Asp Leu Phe Asp
210 215 220

Ala Gln Gly Gln Tyr Pro Asp Thr Leu Leu Arg Ile Tyr Arg Asp Asn
225 230 235 240

Lys Thr Ile Asn Ser Glu Asn Leu
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agc cct ttg ttg ctt gcg aca act gct aca gat ttt acc cct gtt ccc 99
Ser Pro Leu Leu Leu Ala Thr Thr Ala Thr Asp Phe Thr Pro Val Pro
15 20 25

tta tca tct aat caa ata atc aaa act gca aaa gca tct aca aac gat 147
Leu Ser Ser Asn Gln Ile Ile Lys Thr Ala Lys Ala Ser Thr Asn Asp
30 35 40

aat ata aag gat ttg cta gac tgg tat agt agt ggg tct gac act ttt 195
Asn Ile Lys Asp Leu Leu Asp Trp Tyr Ser Ser Gly Ser Asp Thr Phe
45 50 55 60

aca aat agt gaa gtt tta gat aat tcc tta gga tct atg cgt ata aaa 243
Thr Asn Ser Glu Val Leu Asp Asn Ser Leu Gly Ser Met Arg Ile Lys
65 70 75

aac aca gat ggc agc atc agc ttg ata att ttt ccg agt cct tat tat 291
Asn Thr Asp Gly Ser Ile Ser Leu Ile Ile Phe Pro Ser Pro Tyr Tyr

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20 25 30

Arg Pro Lys Pro Ser Gln Leu Gln Arg Ser Asn Leu Val Lys Thr Phe
35 40 45

Lys Ile Tyr Ile Phe Phe Met Arg Val Thr Leu Val Thr His Glu Asn
50 55 60

Val Lys Ser Val Asp Gln Leu Leu Ser His Asp Leu Ile Tyr Asn Val
65 70 75 80

Ser Gly Pro Asn Tyr Asp Lys Leu Lys Thr Glu Leu Lys Asn Gln Glu
85 90 95

Met Ala Thr Leu Phe Lys Asp Lys Asn Val Asp Ile Tyr Gly Val Glu
100 105 110

Tyr Tyr His Leu Cys Tyr Leu Cys Glu Asn Ala Glu Arg Ser Ala Cys
115 120 125

Leu Tyr Gly Gly Val Thr Asn His Glu Gly Asn His Leu Glu Ile Pro
130 135 140

Lys Lys Ile Val Val Lys Val Ser Ile Asp Gly Ile Gln Ser Leu Ser
145 150 155 160

Phe Asp Ile Glu Gln Ile Lys Asn Gly Asn Cys Ser Arg Ile Ser Tyr
165 170 175

Thr Val Arg Lys Tyr Leu Thr Asp Asn Lys Gln Leu Tyr Thr Asn Gly
180 185 190

Pro Ser Lys Tyr Glu Thr Gly Tyr Ile Lys Phe Ile Pro Lys Asn Lys
195 200 205

Glu Ser Phe Trp Phe Asp Phe Phe Pro Glu Pro Glu Phe Thr Gln Ser
210 215 220

tta gtt aaa acc ttc aaa ata tat att ttc ttt atg agg gtg acc ctg Leu Val Lys Thr Phe Lys Ile Tyr Ile Phe Phe Met Arg Val Thr Leu	255
45 50 55	
gtt act cac gag aat gtg aaa tct gtt gat caa ctt tta tca cac gat Val Thr His Glu Asn Val Lys Ser Val Asp Gln Leu Leu Ser His Asp	303
60 65 70 75	
tta ata tat aat gtt tca ggg cca aat tat gat aaa tta aaa act gaa Leu Ile Tyr Asn Val Ser Gly Pro Asn Tyr Asp Lys Leu Lys Thr Glu	351
80 85 90	
ctt aag aac caa gag atg gca act tta ttt aag gat aaa aac gtt gat Leu Lys Asn Gln Glu Met Ala Thr Leu Phe Lys Asp Lys Asn Val Asp	399
95 100 105	
att tat ggt gta gaa tat tac cat ctc tgt tat tta tgt gaa aat gca Ile Tyr Gly Val Glu Tyr Tyr His Leu Cys Tyr Leu Cys Glu Asn Ala	447
110 115 120	
gaa agg agt gca tgt ctc tac gga ggg gta aca aat cat gaa ggg aat Glu Arg Ser Ala Cys Leu Tyr Gly Gly Val Thr Asn His Glu Gly Asn	495
125 130 135	
cat tta gaa att cct aaa aag ata gtc gtt aaa gta tca atc gat ggt His Leu Glu Ile Pro Lys Lys Ile Val Val Lys Val Ser Ile Asp Gly	543
140 145 150 155	
atc caa agc cta tca ttt gat att gaa caa ata aaa aat ggt aac tgc Ile Gln Ser Leu Ser Phe Asp Ile Glu Gln Ile Lys Asn Gly Asn Cys	591
160 165 170	
tca aga att agc tat aca gtt aga aaa tat ctt aca gat aat aag caa Ser Arg Ile Ser Tyr Thr Val Arg Lys Tyr Leu Thr Asp Asn Lys Gln	639
175 180 185	
cta tat act aat gga cct tct aaa tat gaa act gga tat ata aag ttc Leu Tyr Thr Asn Gly Pro Ser Lys Tyr Glu Thr Gly Tyr Ile Lys Phe	687
190 195 200	
ata cct aag aat aaa gaa agt ttt tgg ttt gat ttt ttc cct gaa cca Ile Pro Lys Asn Lys Glu Ser Phe Trp Phe Asp Phe Phe Pro Glu Pro	735
205 210 215	
gaa ttt act caa tct aaa tat ctt atg ata tat aaa gat aat gaa acg Glu Phe Thr Gln Ser Lys Tyr Leu Met Ile Tyr Lys Asp Asn Glu Thr	783
220 225 230 235	
ctt gac tca aac aca agc caa att gaa gtc tac cta aca acc aag taa Leu Asp Ser Asn Thr Ser Gln Ile Glu Val Tyr Leu Thr Thr Lys	831
240 245 250	
cttttgcttt tggcaacctt acctactgct ggattttagaa attttattgc aattctttta	891
ttaatgtaaa aacgctcatt tgatgagcgg ttttgtctta tctaaaggag cttaacctcc	951
taatgtgc aaatttaaa tggtggatt ttgtatgtt cattgtatgtt gatggtaat	1011
ccccattttc gacagacatc	1031

Lys Tyr Leu Met Ile Tyr Lys Asp Asn Glu Thr Leu Asp Ser Asn Thr
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Ser Gln Ile Glu Val Tyr Leu Thr Thr Lys
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caggctcgct tttgcgggccc ttttttatat ctgcgccggg tctggtgctg attacttcag 180
ccaaaaggaa cacctgtat atg aag tgt ata tta ttt aaa tgg gta ctg tgc 232
Met Lys Cys Ile Leu Phe Lys Trp Val Leu Cys
1 5 10

ctg tta ctg ggt ttt tct tcg gta tcc tat tcc cgg gag ttt acg ata 280
Leu Leu Leu Gly Phe Ser Ser Val Ser Tyr Ser Arg Glu Phe Thr Ile

15	20	25	
gac ttt tcg acc caa caa agt tat gtc tct tcg tta aat agt ata cgg Asp Phe Ser Thr Gln Gln Ser Tyr Val Ser Ser Leu Asn Ser Ile Arg 30	35	40	328
aca gag ata tcg acc cct ctt gaa cat ata tct cag ggg acc aca tcg Thr Glu Ile Ser Thr Pro Leu Glu His Ile Ser Gln Gly Thr Thr Ser 45	50	55	376
gtg tct gtt att aac cac acc cca ccg ggc agt tat ttt gct gtg gat Val Ser Val Ile Asn His Thr Pro Pro Gly Ser Tyr Phe Ala Val Asp 60	65	70	424
ata cga ggg ctt gat gtc tat cag gcg cgt ttt gac cat ctt cgt ctg Ile Arg Gly Leu Asp Val Tyr Gln Ala Arg Phe Asp His Leu Arg Leu 80	85	90	472
att att gag caa aat aat tta tat gtg gcc ggg ttc gtt aat acg gca Ile Ile Glu Gln Asn Asn Leu Tyr Val Ala Gly Phe Val Asn Thr Ala 95	100	105	520
aca aat act ttc tac cgt ttt tca gat ttt aca cat ata tca gtg ccc Thr Asn Thr Phe Tyr Arg Phe Ser Asp Phe Thr His Ile Ser Val Pro 110	115	120	568
ggt gtg aca acg gtt tcc atg aca acg gac agc agt tat acc act ctg Gly Val Thr Thr Val Ser Met Thr Thr Asp Ser Ser Tyr Thr Thr Leu 125	130	135	616
caa cgt gtc gca gcg ctg gaa cgt tcc gga atg caa atc agt cgt cac Gln Arg Val Ala Ala Leu Glu Arg Ser Gly Met Gln Ile Ser Arg His 140	145	150	664
tca ctg gtt tca tca tat ctg gcg tta atg gag ttc agt ggt aat aca Ser Leu Val Ser Ser Tyr Leu Ala Leu Met Glu Phe Ser Gly Asn Thr 160	165	170	712
atg acc aga gat gca tcc aga gca gtt ctg cgt ttt gtc act gtc aca Met Thr Arg Asp Ala Ser Arg Ala Val Leu Arg Phe Val Thr Val Thr 175	180	185	760
gca gaa gcc tta cgc ttc agg cag ata cag aga gaa ttt cgt cag gca Ala Glu Ala Leu Arg Phe Arg Gln Ile Gln Arg Glu Phe Arg Gln Ala 190	195	200	808
ctg tct gaa act gct cct gtg tat acg atg acg ccg gga gac gtg gac Leu Ser Glu Thr Ala Pro Val Tyr Thr Met Thr Pro Gly Asp Val Asp 205	210	215	856
ctc act ctg aac tgg ggg cga atc agc aat gtg ctt ccg gag tat cgg Leu Thr Leu Asn Trp Gly Arg Ile Ser Asn Val Leu Pro Glu Tyr Arg 220	225	230	904
gga gag gat ggt gtc aga gtg ggg aga ata tcc ttt aat aat ata tca Gly Glu Asp Gly Val Arg Val Gly Arg Ile Ser Phe Asn Asn Ile Ser 240	245	250	952
gcg ata ctg ggg act gtg gcc gtt ata ctg aat tgc cat cat cag ggg Ala Ile Leu Gly Thr Val Ala Val Ile Leu Asn Cys His His Gln Gly			1000

255	260	265	
gct cgt tct gtt cgc gcc gtg aat gaa gag agt caa cca gaa tgt cag Ala Arg Ser Val Arg Ala Val Asn Glu Glu Ser Gln Pro Glu Cys Gln 270	275	280	1048
ata act ggc gac agg cct gtt ata aaa ata aac aat aca tta tgg gaa Ile Thr Gly Asp Arg Pro Val Ile Lys Ile Asn Asn Thr Leu Trp Glu 285	290	295	1096
agt aat aca gct gca gcg ttt ctg aac aga aag tca cag ttt tta tat Ser Asn Thr Ala Ala Phe Leu Asn Arg Lys Ser Gln Phe Leu Tyr 300	305	310	1144
aca acg ggt aaa taa aggagtttaag catgaagaag atgtttatgg cggttttatt Thr Thr Gly Lys			1199
tgcatggact tctgttaatg caatggcgcc ggattgtgct aaaggtaaaa ttgagtttc caagtataat gaggatgaca catttacagt gaagggttgac gggaaagaat actggaccag tcgctggaat ctgcaaccgt tactgcaaag tgctcagttt acaggaatga ctgtcacaat caaattccagt acctgtgaat caggctccgg atttgctgaa gtgcagtttataatgactg aggcataacc tgattcgtgg tatgtggta acaagtgtaa tctgtgtcac aattcagtca gttgacagtt gcctgtcaga ctgagcattt gttaaaaaaa ttccatgg tgaatcccc tgtgtggagg ggcgactgg gaaaaatcct tgcttgat tcattatcga cac			1259
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Gln Ser Tyr Val Ser Ser Leu Asn Ser Ile Arg Thr Glu Ile Ser Thr 35 40 45			
Pro Leu Glu His Ile Ser Gln Gly Thr Thr Ser Val Ser Val Ile Asn 50 55 60			
His Thr Pro Pro Gly Ser Tyr Phe Ala Val Asp Ile Arg Gly Leu Asp 65 70 75 80			
Val Tyr Gln Ala Arg Phe Asp His Leu Arg Leu Ile Ile Glu Gln Asn 85 90 95			
Asn Leu Tyr Val Ala Gly Phe Val Asn Thr Ala Thr Asn Thr Phe Tyr			

P P E D P P E S P P P P E S P P E D P P E

100 105 110

Arg Phe Ser Asp Phe Thr His Ile Ser Val Pro Gly Val Thr Thr Val
115 120 125

Ser Met Thr Thr Asp Ser Ser Tyr Thr Thr Leu Gln Arg Val Ala Ala
130 135 140

Leu Glu Arg Ser Gly Met Gln Ile Ser Arg His Ser Leu Val Ser Ser
145 150 155 160

Tyr Leu Ala Leu Met Glu Phe Ser Gly Asn Thr Met Thr Arg Asp Ala
165 170 175

Ser Arg Ala Val Leu Arg Phe Val Thr Val Thr Ala Glu Ala Leu Arg
180 185 190

Phe Arg Gln Ile Gln Arg Glu Phe Arg Gln Ala Leu Ser Glu Thr Ala
195 200 205

Pro Val Tyr Thr Met Thr Pro Gly Asp Val Asp Leu Thr Leu Asn Trp
210 215 220

Gly Arg Ile Ser Asn Val Leu Pro Glu Tyr Arg Gly Glu Asp Gly Val
225 230 235 240

Arg Val Gly Arg Ile Ser Phe Asn Asn Ile Ser Ala Ile Leu Gly Thr
245 250 255

Val Ala Val Ile Leu Asn Cys His His Gln Gly Ala Arg Ser Val Arg
260 265 270

Ala Val Asn Glu Glu Ser Gln Pro Glu Cys Gln Ile Thr Gly Asp Arg
275 280 285

Pro Val Ile Lys Ile Asn Asn Thr Leu Trp Glu Ser Asn Thr Ala Ala
290 295 300

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Tyr Gln Thr Ile
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gatattattt atatgataat agttcatttt gtattttgt ttttttgat attctcacct	180
gcttagttac aataaatcaa ttctatcgct gtatggtata gactgttta ttatataattt	240
tgaatatttt taatctgccc agtctggttt tttaaaaaag tgctatcctc ttaatgtctt	300
tactaaatta gaaaacaagt ttcactttca actattgcat cttaattaa tggtaaggt	360
gatttcaaat gctcggttgt ggccagttat acctcaaata actcaagttg ttgagcacag	420
ccaacgcaca tgcagtttga cgtatgacag gtatgcttta ttcatattaa att atg	476
Met 1	
atg gtt ttc cag cca atc agt gag ttt ctc ttg ata agg aat gcg gga	524
Met Val Phe Gln Pro Ile Ser Glu Phe Leu Leu Ile Arg Asn Ala Gly	
5 10 15	
atg tct atg tat ttt aat aaa ata att tca ttt aat att att tca cga	572
Met Ser Met Tyr Phe Asn Lys Ile Ile Ser Phe Asn Ile Ile Ser Arg	
20 25 30	
ata gtt att tgt atc ttt ttg ata tgt gga atg ttc atg gct ggg gct	620
Ile Val Ile Cys Ile Phe Leu Ile Cys Gly Met Phe Met Ala Gly Ala	
35 40 45	
tca gaa aaa tat gat gct aac gca ccg caa cag gtc cag cct tat tct	668
Ser Glu Lys Tyr Asp Ala Asn Ala Pro Gln Gln Val Gln Pro Tyr Ser	
50 55 60 65	
gtc tct tca tct gca ttt gaa aat ctc cat cct aat aat gaa atg gag	716
Val Ser Ser Ala Phe Glu Asn Leu His Pro Asn Asn Glu Met Glu	
70 75 80	
agt tca atc aat ccc ttt tcc gca tcg gat aca gaa aga aat gct gca	764
Ser Ser Ile Asn Pro Phe Ser Ala Ser Asp Thr Glu Arg Asn Ala Ala	
85 90 95	
ata ata gat cgc gcc aat aag gag cag gag act gaa gcg gtg aat aag	812

Ile Ile Asp Arg Ala Asn Lys Glu Gln Glu Thr Glu Ala Val Asn Lys			
100	105	110	
atg ata agc acc ggg gcc agg tta gct gca tca ggc agg gca tct gat			860
Met Ile Ser Thr Gly Ala Arg Leu Ala Ala Ser Gly Arg Ala Ser Asp			
115	120	125	
gtt gct cac tca atg gtg ggc gat gcg gtt aat caa gaa atc aaa cag			908
Val Ala His Ser Met Val Gly Asp Ala Val Asn Gln Glu Ile Lys Gln			
130	135	140	145
tgg tta aat cga ttc ggt acg gct caa gtt aat ctg aat ttt gac aaa			956
Trp Leu Asn Arg Phe Gly Thr Ala Gln Val Asn Leu Asn Phe Asp Lys			
150	155	160	
aat ttt tcg cta aaa gaa agc tct ctt gat tgg ctg gct cct tgg tat			1004
Asn Phe Ser Leu Lys Glu Ser Ser Leu Asp Trp Leu Ala Pro Trp Tyr			
165	170	175	
gac tct gct tca ttc ctc ttt ttt agt cag tta ggt att cgc aat aaa			1052
Asp Ser Ala Ser Phe Leu Phe Ser Gln Leu Gly Ile Arg Asn Lys			
180	185	190	
gac agc cgc aac aca ctt aac ctt ggc gtc ggg ata cgt aca ttg gag			1100
Asp Ser Arg Asn Thr Leu Asn Leu Gly Val Gly Ile Arg Thr Leu Glu			
195	200	205	
aac ggt tgg ctg tac gga ctt aat act ttt tat gat aat gat ttg acc			1148
Asn Gly Trp Leu Tyr Gly Leu Asn Thr Phe Tyr Asp Asn Asp Leu Thr			
210	215	220	225
ggc cac aac cac cgt atc ggt ctt ggt gcc gag gcc tgg acc gat tat			1196
Gly His Asn His Arg Ile Gly Leu Gly Ala Glu Ala Trp Thr Asp Tyr			
230	235	240	
tta cag ttg gct gcc aat ggg tat ttt cgc ctc aat gga tgg cac tcg			1244
Leu Gln Leu Ala Ala Asn Gly Tyr Phe Arg Leu Asn Gly Trp His Ser			
245	250	255	
tcg cgt gat ttc tcc gac tat aaa gag cgc cca gcc act ggg ggg gat			1292
Ser Arg Asp Phe Ser Asp Tyr Lys Glu Arg Pro Ala Thr Gly Gly Asp			
260	265	270	
ttg cgc gcg aat gct tat tta cct gca ctc cca caa ctg ggg ggg aag			1340
Leu Arg Ala Asn Ala Tyr Leu Pro Ala Leu Pro Gln Leu Gly Gly Lys			
275	280	285	
ttg atg tat gag caa tac acc ggt gag cgt gtt gct tta ttt ggt aaa			1388
Leu Met Tyr Glu Gln Tyr Thr Gly Glu Arg Val Ala Leu Phe Gly Lys			
290	295	300	305
gat aat ctg caa cgc aac cct tat gcc gtg act gcc ggg atc aat tac			1436
Asp Asn Leu Gln Arg Asn Pro Tyr Ala Val Thr Ala Gly Ile Asn Tyr			
310	315	320	
acc ccc gtg cct cta ctc act gtc ggg gta gat cag cgt atg ggg aaa			1484
Thr Pro Val Pro Leu Leu Thr Val Gly Val Asp Gln Arg Met Gly Lys			
325	330	335	
agc agt aag cat gaa aca cag tgg aac ctc caa atg aac tat cgc ctg			1532

Ser Ser Lys His Glu Thr Gln Trp Asn Leu Gln Met Asn Tyr Arg Leu			
340	345	350	
gac gag agt ttt cag tcg caa ctt agc cct tca gcg gtg gca gga aca			1580
Gly Glu Ser Phe Gln Ser Gln Leu Ser Pro Ser Ala Val Ala Gly Thr			
355	360	365	
cgt cta ctg gcg gag agc cgc tat aac ctt gtc gat cgt aac aat aat			1628
Arg Leu Leu Ala Glu Ser Arg Tyr Asn Leu Val Asp Arg Asn Asn Asn			
370	375	380	385
atc gtg ttg gag tat cag aaa cag cag gtg gtt aaa ctg aca tta tcg			1676
Ile Val Leu Glu Tyr Gln Lys Gln Gln Val Val Lys Leu Thr Leu Ser			
390	395	400	
cca gca act atc tcc ggc ctg ccg ggt cag gtt tat cag gtg aac gca			1724
Pro Ala Thr Ile Ser Gly Leu Pro Gly Gln Val Tyr Gln Val Asn Ala			
405	410	415	
caa gta caa ggg gca tct gct gta agg gaa att gtc tgg agt gat gcc			1772
Gln Val Gln Gly Ala Ser Ala Val Arg Glu Ile Val Trp Ser Asp Ala			
420	425	430	
gaa ctg att gcc gct ggc ggc aca tta aca cca ctg agt acc aca caa			1820
Glu Leu Ile Ala Ala Gly Gly Thr Leu Thr Pro Leu Ser Thr Thr Gln			
435	440	445	
ttc aac ttg gtt tta ccg cct tat aaa cgc aca gca caa gtg agt cg			1868
Phe Asn Leu Val Leu Pro Pro Tyr Lys Arg Thr Ala Gln Val Ser Arg			
450	455	460	465
gta acg gac gac ctg aca gcc aac ttt tat tcg ctt agt gcg ctc g			1916
Val Thr Asp Asp Leu Thr Ala Asn Phe Tyr Ser Leu Ser Ala Leu Ala			
470	475	480	
gtt gat cac caa gga aac cga tct aac tca ttc aca ttg agc gtc acc			1964
Val Asp His Gln Gly Asn Arg Ser Asn Ser Phe Thr Leu Ser Val Thr			
485	490	495	
gtt cag cag cct cag ttg aca tta acg gcg gcc gtc att ggt gat ggc			2012
Val Gln Gln Pro Gln Leu Thr Leu Thr Ala Ala Val Ile Gly Asp Gly			
500	505	510	
gca ccg gct aat ggg aaa act gca atc acc gtt gag ttc acc gtt gct			2060
Ala Pro Ala Asn Gly Lys Thr Ala Ile Thr Val Glu Phe Thr Val Ala			
515	520	525	
gat ttt gag ggg aaa ccc tta gcc ggg cag gag gtg gtg ata acc acc			2108
Asp Phe Glu Gly Lys Pro Leu Ala Gly Gln Glu Val Val Ile Thr Thr			
530	535	540	545
aat aat ggt gcg cta ccg aat aaa atc acg gaa aag aca gat gca aat			2156
Asn Asn Gly Ala Leu Pro Asn Lys Ile Thr Glu Lys Thr Asp Ala Asn			
550	555	560	
ggc gtc gcg cgc att gca tta acc aat acg aca gat ggc gtg acg gta			2204
Gly Val Ala Arg Ile Ala Leu Thr Asn Thr Thr Asp Gly Val Thr Val			
565	570	575	
gtc aca gca gaa gtg gag ggg caa cgg caa agt gtt gat acc cac ttt			2252

Val Thr Ala Glu Val Glu Gly Gln Arg Gln Ser Val Asp Thr His Phe			
580	585	590	
gtt aag ggt act atc gcg gcg gat aaa tcc act ctg gct gcg gta ccg		2300	
Val Lys Gly Thr Ile Ala Ala Asp Lys Ser Thr Leu Ala Ala Val Pro			
595	600	605	
aca tct atc atc gct gat ggt cta atg gct tca acc atc acg ttg gag		2348	
Thr Ser Ile Ile Ala Asp Gly Leu Met Ala Ser Thr Ile Thr Leu Glu			
610	615	620	625
ttg aag gat acc tat ggg gac ccg cag gct ggc gcg aat gtg gct ttt		2396	
Leu Lys Asp Thr Tyr Gly Asp Pro Gln Ala Gly Ala Asn Val Ala Phe			
630	635	640	
gac aca acc tta ggc aat atg ggc gtt atc acg gat cac aat gac ggc		2444	
Asp Thr Thr Leu Gly Asn Met Gly Val Ile Thr Asp His Asn Asp Gly			
645	650	655	
act tat agc gca cca ttg acc agt acc acg ttg ggg gta gca aca gta		2492	
Thr Tyr Ser Ala Pro Leu Thr Ser Thr Thr Leu Gly Val Ala Thr Val			
660	665	670	
acg gtg aaa gtg gat ggg gct gcg ttc agt gtg ccg agt gtg acg gtt		2540	
Thr Val Lys Val Asp Gly Ala Ala Phe Ser Val Pro Ser Val Thr Val			
675	680	685	
aat ttc acg gca gat cct att cca gat gct ggc cgc tcc agt ttc acc		2588	
Asn Phe Thr Ala Asp Pro Ile Pro Asp Ala Gly Arg Ser Ser Phe Thr			
690	695	700	705
gtc tcc aca ccg gat atc ttg gct gat ggc acg atg agt tcc aca tta		2636	
Val Ser Thr Pro Asp Ile Leu Ala Asp Gly Thr Met Ser Ser Thr Leu			
710	715	720	
tcc ttt gtc cct gtc gat aag aat ggc cat ttt atc agt ggg atg cag		2684	
Ser Phe Val Pro Val Asp Lys Asn Gly His Phe Ile Ser Gly Met Gln			
725	730	735	
ggc ttg agt ttt actcaa aac ggt gtg ccg gtg agt att agc ccc att		2732	
Gly Leu Ser Phe Thr Gln Asn Gly Val Pro Val Ser Ile Ser Pro Ile			
740	745	750	
acc gag cag cca gat agc tat acc gcg acg gtg gtt ggg aat agt gtc		2780	
Thr Glu Gln Pro Asp Ser Tyr Thr Ala Thr Val Val Gly Asn Ser Val			
755	760	765	
ggt gat gtc aca atc acg ccg cag gtt gat acc ctg ata ctg agt aca		2828	
Gly Asp Val Thr Ile Thr Pro Gln Val Asp Thr Leu Ile Leu Ser Thr			
770	775	780	785
ttg cag aaa aaa ata tcc cta ttc ccg gta cct acg ctg acc ggt att		2876	
Leu Gln Lys Lys Ile Ser Leu Phe Pro Val Pro Thr Leu Thr Gly Ile			
790	795	800	
ctg gtt aac ggg caa aat ttc gct acg gat aaa ggg ttc ccg aaa acg		2924	
Leu Val Asn Gly Gln Asn Phe Ala Thr Asp Lys Gly Phe Pro Lys Thr			
805	810	815	
atc ttt aaa aac gcc aca ttc cag tta cag atg gat aac gat gtt gct		2972	

Ile Phe Lys Asn Ala Thr Phe Gln Leu Gln Met Asp Asn Asp Val Ala			
820	825	830	
aat aat act cag tat gag tgg tcg tcg tca ttc aca ccc aat gta tcg		3020	
Asn Asn Thr Gln Tyr Glu Trp Ser Ser Ser Phe Thr Pro Asn Val Ser			
835	840	845	
gtt aac gat cag ggt cag gtg acg att acc tac caa acc tat agc gaa		3068	
Val Asn Asp Gln Gly Gln Val Thr Ile Thr Tyr Gln Thr Tyr Ser Glu			
850	855	860	865
gtg gct gtg acg gcg aaa agt aaa aaa ttc cca agt tat tcg gtg agt		3116	
Val Ala Val Thr Ala Lys Ser Lys Lys Phe Pro Ser Tyr Ser Val Ser			
870	875	880	
tat cgg ttc tac cca aat cgg tgg ata tac gat ggc ggc aga tcg ctg		3164	
Tyr Arg Phe Tyr Pro Asn Arg Trp Ile Tyr Asp Gly Gly Arg Ser Leu			
885	890	895	
gta tcc agt ctc gag gcc agc aga caa tgc caa ggt tca gat atg tct		3212	
Val Ser Ser Leu Glu Ala Ser Arg Gln Cys Gln Gly Ser Asp Met Ser			
900	905	910	
gcg gtt ctt gaa tcc tca cgt gca acc aac gga acg cgt gcg cct gac		3260	
Ala Val Leu Glu Ser Ser Arg Ala Thr Asn Gly Thr Arg Ala Pro Asp			
915	920	925	
ggg aca ttg tgg ggc gag tgg ggg agc ttg acc gcg tat agt tct gat		3308	
Gly Thr Leu Trp Gly Glu Trp Gly Ser Leu Thr Ala Tyr Ser Ser Asp			
930	935	940	945
tgg caa tct ggt gaa tat tgg gtc aaa aag acc agc acg gat ttt gaa		3356	
Trp Gln Ser Gly Glu Tyr Trp Val Lys Lys Thr Ser Thr Asp Phe Glu			
950	955	960	
acc atg aat atg gac aca ggc gca ctg caa cca ggg cct gca tac ttg		3404	
Thr Met Asn Met Asp Thr Gly Ala Leu Gln Pro Gly Pro Ala Tyr Leu			
965	970	975	
gcg ttc ccg ctc tgt gcg ctg tca ata taa ccagataaca gatagaata		3454	
Ala Phe Pro Leu Cys Ala Leu Ser Ile			
980	985		
agaacagttt aatgagctga ttatttgggg cgcgaaatggg agtccggcaa tcctagactc		3514	
ccccccataag tagcaaacgt ccagaagaac aacgcccgtc aggttaattg agcggcgctg		3574	
tttttttaaa aggattgtcg cgattaaatg ccgatcttac ggcccaggat attggcacct		3634	
tttagcctgac catcagggcc atagagcgat tggccgtggc gggtattcag gactgccaat		3694	
gcttgattat tatgttcaat atgttgtgt aacagtaacc cattgtgcag gttgctgtaa		3754	
cgcaggcgct cagttagttg caaaagacgc tgccaacgtt cagctaaagc ctgcattgg		3814	
ggataaggcg cttgaatatt cgcggtggc tcgggtgtt a tccgggtctg atccaaatag		3874	
gccaaaggttt ccaatattga actttttgt tccgttaccc cttgcaatac ccagcattgg		3934	
atcc		3938	

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<400> 33

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Gly Met Ser Met Tyr Phe Asn Lys Ile Ile Ser Phe Asn Ile Ile Ser
20 25 30

Arg Ile Val Ile Cys Ile Phe Leu Ile Cys Gly Met Phe Met Ala Gly
35 40 45

Ala Ser Glu Lys Tyr Asp Ala Asn Ala Pro Gln Gln Val Gln Pro Tyr
50 55 60

Ser Val Ser Ser Ser Ala Phe Glu Asn Leu His Pro Asn Asn Glu Met
65 70 75 80

Glu Ser Ser Ile Asn Pro Phe Ser Ala Ser Asp Thr Glu Arg Asn Ala
85 90 95

Ala Ile Ile Asp Arg Ala Asn Lys Glu Gln Glu Thr Glu Ala Val Asn
100 105 110

Lys Met Ile Ser Thr Gly Ala Arg Leu Ala Ala Ser Gly Arg Ala Ser
115 120 125

Asp Val Ala His Ser Met Val Gly Asp Ala Val Asn Gln Glu Ile Lys
130 135 140

Gln Trp Leu Asn Arg Phe Gly Thr Ala Gln Val Asn Leu Asn Phe Asp
145 150 155 160

Lys Asn Phe Ser Leu Lys Glu Ser Ser Leu Asp Trp Leu Ala Pro Trp
165 170 175

Tyr Asp Ser Ala Ser Phe Leu Phe Phe Ser Gln Leu Gly Ile Arg Asn
180 185 190

Lys Asp Ser Arg Asn Thr Leu Asn Leu Gly Val Gly Ile Arg Thr Leu
195 200 205

Glu Asn Gly Trp Leu Tyr Gly Leu Asn Thr Phe Tyr Asp Asn Asp Leu
210 215 220

Thr Gly His Asn His Arg Ile Gly Leu Gly Ala Glu Ala Trp Thr Asp
225 230 235 240

Tyr Leu Gln Leu Ala Ala Asn Gly Tyr Phe Arg Leu Asn Gly Trp His
245 250 255

Ser Ser Arg Asp Phe Ser Asp Tyr Lys Glu Arg Pro Ala Thr Gly Gly
260 265 270

Asp Leu Arg Ala Asn Ala Tyr Leu Pro Ala Leu Pro Gln Leu Gly Gly
275 280 285

Lys Leu Met Tyr Glu Gln Tyr Thr Gly Glu Arg Val Ala Leu Phe Gly
290 295 300

Lys Asp Asn Leu Gln Arg Asn Pro Tyr Ala Val Thr Ala Gly Ile Asn
305 310 315 320

Tyr Thr Pro Val Pro Leu Leu Thr Val Gly Val Asp Gln Arg Met Gly
325 330 335

Lys Ser Ser Lys His Glu Thr Gln Trp Asn Leu Gln Met Asn Tyr Arg
340 345 350

Leu Gly Glu Ser Phe Gln Ser Gln Leu Ser Pro Ser Ala Val Ala Gly
355 360 365

Thr Arg Leu Leu Ala Glu Ser Arg Tyr Asn Leu Val Asp Arg Asn Asn
370 375 380

Asn Ile Val Leu Glu Tyr Gln Lys Gln Gln Val Val Lys Leu Thr Leu
385 390 395 400

Ser Pro Ala Thr Ile Ser Gly Leu Pro Gly Gln Val Tyr Gln Val Asn
405 410 415

Ala Gln Val Gln Gly Ala Ser Ala Val Arg Glu Ile Val Trp Ser Asp
420 425 430

Ala Glu Leu Ile Ala Ala Gly Gly Thr Leu Thr Pro Leu Ser Thr Thr
435 440 445

Gln Phe Asn Leu Val Leu Pro Pro Tyr Lys Arg Thr Ala Gln Val Ser
450 455 460

Arg Val Thr Asp Asp Leu Thr Ala Asn Phe Tyr Ser Leu Ser Ala Leu
465 470 475 480

Ala Val Asp His Gln Gly Asn Arg Ser Asn Ser Phe Thr Leu Ser Val
485 490 495

Thr Val Gln Gln Pro Gln Leu Thr Leu Thr Ala Ala Val Ile Gly Asp
500 505 510

Gly Ala Pro Ala Asn Gly Lys Thr Ala Ile Thr Val Glu Phe Thr Val
515 520 525

Ala Asp Phe Glu Gly Lys Pro Leu Ala Gly Gln Glu Val Val Ile Thr
530 535 540

Thr Asn Asn Gly Ala Leu Pro Asn Lys Ile Thr Glu Lys Thr Asp Ala
545 550 555 560

Asn Gly Val Ala Arg Ile Ala Leu Thr Asn Thr Thr Asp Gly Val Thr
565 570 575

Val Val Thr Ala Glu Val Glu Gly Gln Arg Gln Ser Val Asp Thr His
580 585 590

Phe Val Lys Gly Thr Ile Ala Ala Asp Lys Ser Thr Leu Ala Ala Val
595 600 605

Pro Thr Ser Ile Ile Ala Asp Gly Leu Met Ala Ser Thr Ile Thr Leu
610 615 620

Glu Leu Lys Asp Thr Tyr Gly Asp Pro Gln Ala Gly Ala Asn Val Ala
625 630 635 640

Phe Asp Thr Thr Leu Gly Asn Met Gly Val Ile Thr Asp His Asn Asp
645 650 655

Gly Thr Tyr Ser Ala Pro Leu Thr Ser Thr Thr Leu Gly Val Ala Thr
660 665 670

Val Thr Val Lys Val Asp Gly Ala Ala Phe Ser Val Pro Ser Val Thr
675 680 685

Val Asn Phe Thr Ala Asp Pro Ile Pro Asp Ala Gly Arg Ser Ser Phe
690 695 700

Thr Val Ser Thr Pro Asp Ile Leu Ala Asp Gly Thr Met Ser Ser Thr
705 710 715 720

Leu Ser Phe Val Pro Val Asp Lys Asn Gly His Phe Ile Ser Gly Met
725 730 735

Gln Gly Leu Ser Phe Thr Gln Asn Gly Val Pro Val Ser Ile Ser Pro
740 745 750

Ile Thr Glu Gln Pro Asp Ser Tyr Thr Ala Thr Val Val Gly Asn Ser
755 760 765

Val Gly Asp Val Thr Ile Thr Pro Gln Val Asp Thr Leu Ile Leu Ser
770 775 780

Thr Leu Gln Lys Lys Ile Ser Leu Phe Pro Val Pro Thr Leu Thr Gly
785 790 795 800

Ile Leu Val Asn Gly Gln Asn Phe Ala Thr Asp Lys Gly Phe Pro Lys
805 810 815

Thr Ile Phe Lys Asn Ala Thr Phe Gln Leu Gln Met Asp Asn Asp Val
820 825 830

Ala Asn Asn Thr Gln Tyr Glu Trp Ser Ser Ser Phe Thr Pro Asn Val
835 840 845

Ser Val Asn Asp Gln Gly Gln Val Thr Ile Thr Tyr Gln Thr Tyr Ser
850 855 860

Glu Val Ala Val Thr Ala Lys Ser Lys Lys Phe Pro Ser Tyr Ser Val
865 870 875 880

Ser Tyr Arg Phe Tyr Pro Asn Arg Trp Ile Tyr Asp Gly Gly Arg Ser
885 890 895

Leu Val Ser Ser Leu Glu Ala Ser Arg Gln Cys Gln Gly Ser Asp Met
900 905 910

Ser Ala Val Leu Glu Ser Ser Arg Ala Thr Asn Gly Thr Arg Ala Pro
915 920 925

Asp Gly Thr Leu Trp Gly Glu Trp Gly Ser Leu Thr Ala Tyr Ser Ser
930 935 940

Asp Trp Gln Ser Gly Glu Tyr Trp Val Lys Lys Thr Ser Thr Asp Phe
945 950 955 960

Glu Thr Met Asn Met Asp Thr Gly Ala Leu Gln Pro Gly Pro Ala Tyr
965 970 975

Leu Ala Phe Pro Leu Cys Ala Leu Ser Ile
980 985

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Synthetic Sequence

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acid

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amino acid

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amino acid

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Leu Xaa Gly Gly Xaa Gly Asn Asp Xaa
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aaagaaaaatt taagtataat acagcaggat tcttaacgg attcttaaca atttttctaa 120
ctgaccataa aggaacccaaa at atg aaa aaa gca ctt gcc aca ctg att gcc 172
Met Lys Ala Leu Ala Thr Leu Ile Ala
1 5 10

ctc gct ctc ccg gcc gca ctg gcg gaa ggc gca tcc ggc ttt tac 220
Leu Ala Leu Pro Ala Ala Leu Ala Glu Gly Ala Ser Gly Phe Tyr
15 20 25

gtc caa gcc gat gcc gca cac gca aaa gcc tca agc tct tta ggt tct 268
Val Gln Ala Asp Ala Ala His Ala Lys Ala Ser Ser Ser Leu Gly Ser
30 35 40

gcc aaa ggc ttc agc ccg cgc atc tcc gca ggc tac cgc atc aac gac 316
Ala Lys Gly Phe Ser Pro Arg Ile Ser Ala Gly Tyr Arg Ile Asn Asp
45 50 55

ctc cgc ttc gcc gtc gat tac acg cgc tac aaa aac tat aaa gcc cca 364
Leu Arg Phe Ala Val Asp Tyr Thr Arg Tyr Lys Asn Tyr Lys Ala Pro
60 65 70

tcc acc gat ttc aaa ctt tac agc atc ggc gcg tcc gcc att tac gac 412

Fasta format of 2D BLAST - NCBI BLAST

Ser Thr Asp Phe Lys Leu Tyr Ser Ile Gly Ala Ser Ala Ile Tyr Asp				
75	80	85	90	
ttc gac acc caa tcg ccc gtc aaa ccg tat ctc ggc gcg cg _c ttg agc			460	
Phe Asp Thr Gln Ser Pro Val Lys Pro Tyr Leu Gly Ala Arg Leu Ser				
95		100	105	
ctc aac cgc gcc tcc gtc gac ttg ggc ggc agc gac agc ttc agc caa			508	
Leu Asn Arg Ala Ser Val Asp Leu Gly Gly Ser Asp Ser Phe Ser Gln				
110		115	120	
acc tcc atc ggc ctc ggc gta ttg acg ggc gta agc tat gcc gtt acc			556	
Thr Ser Ile Gly Leu Gly Val Leu Thr Gly Val Ser Tyr Ala Val Thr				
125		130	135	
ccg aat gtc gat ttg gat gcc ggc tac cgc tac aac tac atc ggc aaa			604	
Pro Asn Val Asp Leu Asp Ala Gly Tyr Arg Tyr Asn Tyr Ile Gly Lys				
140		145	150	
gtc aac act gtc aaa aac gtc cgt tcc ggc gaa ctg tcc gtc ggc gtg			652	
Val Asn Thr Val Lys Asn Val Arg Ser Gly Glu Leu Ser Val Gly Val				
155		160	165	170
cgc gtc aaa ttc tga tatgcgcattt attctgcaaaa ccggcggagcc ttccggcggtt			707	
Arg Val Lys Phe				
ttgtttctg ccacccgcaac tacacaagcc ggccgttttg tacgataatc ccgaatgctg			767	
cggcttctgc cgccttattt tttgaggaat ccgaaatgtc caaaaccatc atccacacccg			827	
aca			830	
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1	5	10	15	
Ala Leu Ala Glu Gly Ala Ser Gly Phe Tyr Val Gln Ala Asp Ala Ala				
20	25	30		
His Ala Lys Ala Ser Ser Ser Leu Gly Ser Ala Lys Gly Phe Ser Pro				
35	40	45		
Arg Ile Ser Ala Gly Tyr Arg Ile Asn Asp Leu Arg Phe Ala Val Asp				
50	55	60		
Tyr Thr Arg Tyr Lys Asn Tyr Lys Ala Pro Ser Thr Asp Phe Lys Leu				
65	70	75	80	
Tyr Ser Ile Gly Ala Ser Ala Ile Tyr Asp Phe Asp Thr Gln Ser Pro				
85	90	95		

Val Lys Pro Tyr Leu Gly Ala Arg Leu Ser Leu Asn Arg Ala Ser Val
100 105 110

Asp Leu Gly Gly Ser Asp Ser Phe Ser Gln Thr Ser Ile Gly Leu Gly
115 120 125

Val Leu Thr Gly Val Ser Tyr Ala Val Thr Pro Asn Val Asp Leu Asp
130 135 140

Ala Gly Tyr Arg Tyr Asn Tyr Ile Gly Lys Val Asn Thr Val Lys Asn
145 150 155 160

Val Arg Ser Gly Glu Leu Ser Val Gly Val Arg Val Lys Phe
165 170

<210> 37 <211> 352 <212> PRT <213> Homo sapiens <400> 37

Met Glu Gly Ile Ser Ile Tyr Thr Ser Asp Asn Tyr Thr Glu Glu Met
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Gly Ser Gly Asp Tyr Asp Ser Met Lys Glu Pro Cys Phe Arg Glu Glu
20 25 30

Asn Ala Asn Phe Asn Lys Ile Phe Leu Pro Thr Ile Tyr Ser Ile Ile
35 40 45

Phe Leu Thr Gly Ile Val Gly Asn Gly Leu Val Ile Leu Val Met Gly
50 55 60

Tyr Gln Lys Lys Leu Arg Ser Met Thr Asp Lys Tyr Arg Leu His Leu
65 70 75 80

Ser Val Ala Asp Leu Leu Phe Val Ile Thr Leu Pro Phe Trp Ala Val
85 90 95

Asp Ala Val Ala Asn Trp Tyr Phe Gly Asn Phe Leu Cys Lys Ala Val
100 105 110

His Val Ile Tyr Thr Val Asn Leu Tyr Ser Ser Val Leu Ile Leu Ala
115 120 125

Phe Ile Ser Leu Asp Arg Tyr Leu Ala Ile Val His Ala Thr Asn Ser
130 135 140

Gln Arg Pro Arg Lys Leu Leu Ala Glu Lys Val Val Tyr Val Gly Val
145 150 155 160

Trp Ile Pro Ala Leu Leu Leu Thr Ile Pro Asp Phe Ile Phe Ala Asn
165 170 175

Val Ser Glu Ala Asp Asp Arg Tyr Ile Cys Asp Arg Phe Tyr Pro Asn
180 185 190

Asp Leu Trp Val Val Val Phe Gln Phe Gln His Ile Met Val Gly Leu
195 200 205

Ile Leu Pro Gly Ile Val Ile Leu Ser Cys Tyr Cys Ile Ile Ile Ser
210 215 220

Lys Leu Ser His Ser Lys Gly His Gln Lys Arg Lys Ala Leu Lys Thr
225 230 235 240

Thr Ile Ile Pro Ile Leu Ala Phe Phe Ala Cys Trp Leu Pro Tyr Tyr
245 250 255

Ile Gly Ile Ser Ile Asp Ser Phe Ile Leu Leu Glu Ile Ile Lys Gln
260 265 270

Gly Cys Glu Phe Glu Asn Thr Val His Lys Trp Ile Ser Ile Thr Glu
275 280 285

Ala Leu Ala Phe Phe His Cys Cys Leu Asn Pro Ile Leu Tyr Ala Phe
290 295 300

Leu Gly Ala Lys Phe Lys Thr Ser Ala Gln His Ala Leu Thr Ser Val
305 310 315 320

Ser Arg Gly Ser Ser Leu Lys Ile Leu Ser Lys Gly Lys Arg Gly Gly
325 330 335

His Ser Ser Val Ser Thr Glu Ser Glu Ser Ser Ser Phe His Ser Ser
340 345 350

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<222> (10)..(639) <223>

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Ala Val Glu Phe Asp Gly Val Val Met Gly Ser Asp Ser Arg Val

15	20	25	30	
tct gca ggc gag gcg gtg gtg aac cga gtg ttt gac aag ctg tcc ccg Ser Ala Gly Ala Val Val Asn Arg Val Phe Asp Lys Leu Ser Pro				147
35	40		45	
ctg cac gag cgc atc tac tgt gca ctc tct ggt tca gct gct gat gcc Leu His Glu Arg Ile Tyr Cys Ala Leu Ser Gly Ser Ala Ala Asp Ala				195
50	55		60	
caa gcc gtg gcc gac atg gcc gcc tac cag ctg gag ctc cat ggg ata Gln Ala Val Ala Asp Met Ala Ala Tyr Gln Leu Glu Leu His Gly Ile				243
65	70		75	
gaa ctg gag gaa cct cca ctt gtt ttg gct gct gca aat gtg gtg aga Glu Leu Glu Glu Pro Pro Leu Val Leu Ala Ala Asn Val Val Arg				291
80	85		90	
aat atc agc tat aaa tat cga gag gac ttg tct gca cat ctc atg gta Asn Ile Ser Tyr Lys Tyr Arg Glu Asp Leu Ser Ala His Leu Met Val				339
95	100	105		110
gct ggc tgg gac caa cgt gaa gga ggt cag gta tat gga acc ctg gga Ala Gly Trp Asp Gln Arg Glu Gly Gly Gln Val Tyr Gly Thr Leu Gly				387
115	120		125	
gga atg ctg act cga cag cct ttt gcc att ggt ggc tcc ggc agc acc Gly Met Leu Thr Arg Gln Pro Phe Ala Ile Gly Gly Ser Gly Ser Thr				435
130	135		140	
ttt atc tat ggt tat gtg gat gca gca tat aag cca ggc atg tct ccc Phe Ile Tyr Gly Tyr Val Asp Ala Ala Tyr Lys Pro Gly Met Ser Pro				483
145	150		155	
gag gag tgc agg cgc ttc acc aca gac gct att gct ctg gcc atg agc Glu Glu Cys Arg Arg Phe Thr Thr Asp Ala Ile Ala Leu Ala Met Ser				531
160	165		170	
cgg gat ggc tca agc ggg ggt gtc atc tac ctg gtc act att aca gct Arg Asp Gly Ser Ser Gly Gly Val Ile Tyr Leu Val Thr Ile Thr Ala				579
175	180	185		190
gcc ggt gtg gac cat cga gtc atc ttg ggc aat gaa ctg cca aaa ttc Ala Gly Val Asp His Arg Val Ile Leu Gly Asn Glu Leu Pro Lys Phe				627
195	200		205	
tat gat gag tga accttc Tyr Asp Glu				645

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Glu Phe Asp Gly Gly Val Val Met Gly Ser Asp Ser Arg Val Ser Ala
20 25 30

Gly Glu Ala Val Val Asn Arg Val Phe Asp Lys Leu Ser Pro Leu His
 35 40 45

Glu Arg Ile Tyr Cys Ala Leu Ser Gly Ser Ala Ala Asp Ala Gln Ala
 50 55 60

Val Ala Asp Met Ala Ala Tyr Gln Leu Glu Leu His Gly Ile Glu Leu
 65 70 75 80

Glu Glu Pro Pro Leu Val Leu Ala Ala Asn Val Val Arg Asn Ile
 85 90 95

Ser Tyr Lys Tyr Arg Glu Asp Leu Ser Ala His Leu Met Val Ala Gly
 100 105 110

Trp Asp Gln Arg Glu Gly Gln Val Tyr Gly Thr Leu Gly Gly Met
 115 120 125

Leu Thr Arg Gln Pro Phe Ala Ile Gly Gly Ser Gly Ser Thr Phe Ile
 130 135 140

Tyr Gly Tyr Val Asp Ala Ala Tyr Lys Pro Gly Met Ser Pro Glu Glu
 145 150 155 160

Cys Arg Arg Phe Thr Thr Asp Ala Ile Ala Leu Ala Met Ser Arg Asp
 165 170 175

Gly Ser Ser Gly Gly Val Ile Tyr Leu Val Thr Ile Thr Ala Ala Gly
 180 185 190

Val Asp His Arg Val Ile Leu Gly Asn Glu Leu Pro Lys Phe Tyr Asp
 195 200 205

Glu

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 Met Ala Ser Ser Arg Cys Pro Ala Pro Arg Gly Cys Arg Cys Leu Pro
 1 5 10 15

gga gct tct ctc gca tgg ctg ggg aca gta ctg cta ctt ctc gcc gac 96
 Gly Ala Ser Leu Ala Trp Leu Gly Thr Val Leu Leu Leu Ala Asp
 20 25 30

tgg	gtg	ctg	ctc	cgg	acc	gcg	ctg	ccc	cgc	ata	ttc	tcc	ctg	ctg	gtg		144
Trp	Val	Leu	Leu	Arg	Thr	Ala	Leu	Pro	Arg	Ile	Phe	Ser	Leu	Leu	Val		
35							40						45				
ccc	acc	gcg	ctg	cca	ctg	ctc	cgg	gtc	tgg	gcg	gtg	ggc	ctg	agc	cgc		192
Pro	Thr	Ala	Leu	Pro	Leu	Leu	Arg	Val	Trp	Ala	Val	Gly	Leu	Ser	Arg		
50							55					60					
tgg	gcc	gtg	ctc	tgg	ctg	ggg	gcc	tgc	ggg	gtc	ctc	agg	gca	acg	gtt		240
Trp	Ala	Val	Leu	Trp	Leu	Gly	Ala	Cys	Gly	Val	Leu	Arg	Ala	Thr	Val		
65							70				75			80			
ggc	tcc	aag	agc	gaa	aac	gca	ggt	gcc	cag	ggc	tgg	ctg	gct	gtt	ttg		288
Gly	Ser	Lys	Ser	Glu	Asn	Ala	Gly	Ala	Gln	Gly	Trp	Leu	Ala	Ala	Leu		
							85				90		95				
aag	cca	tta	gct	gcf	gca	ctg	ggc	ttg	gcc	ctg	ccg	gga	ctt	gcc	ttg		336
Lys	Pro	Leu	Ala	Ala	Leu	Gly	Leu	Ala	Leu	Pro	Gly	Leu	Ala	Leu			
							100				105		110				
ttc	cga	gag	ctg	atc	tca	tgg	gga	gcc	ccc	ggg	tcc	gcf	gat	agc	acc		384
Phe	Arg	Glu	Leu	Ile	Ser	Trp	Gly	Ala	Pro	Gly	Ser	Ala	Asp	Ser	Thr		
							115				120		125				
agg	cta	ctg	cac	tgg	gga	agt	cac	cct	acc	gcc	ttc	gtt	gtc	agt	tat		432
Arg	Leu	Leu	His	Trp	Gly	Ser	His	Pro	Thr	Ala	Phe	Val	Val	Ser	Tyr		
							130				135		140				
gca	gcg	gca	ctg	ccc	gca	gca	gcc	ctg	tgg	cac	aaa	ctc	ggg	agc	ctc		480
Ala	Ala	Ala	Leu	Pro	Ala	Ala	Ala	Leu	Trp	His	Lys	Leu	Gly	Ser	Leu		
							145				150		155		160		
tgg	gtg	ccc	gcf	ggt	cag	ggc	ggc	tct	gga	aac	cct	gtg	cgt	cgf	ctt		528
Trp	Val	Pro	Gly	Gly	Gly	Gly	Gly	Ser	Gly	Asn	Pro	Val	Arg	Arg	Leu		
							165				170		175				
cta	ggc	tgc	ctg	ggc	tcg	gag	acg	cgf	cgc	ctc	tcg	ctg	gtc	ctg	gtc		576
Leu	Gly	Cys	Leu	Gly	Ser	Glu	Thr	Arg	Arg	Leu	Ser	Leu	Phe	Leu	Val		
							180				185		190				
ctg	gtg	gtc	ctc	tcc	tct	ctt	ggg	gag	atg	gcc	att	cca	ttc	ttt	acg		624
Leu	Val	Val	Leu	Ser	Leu	Gly	Gly	Glu	Met	Ala	Ile	Pro	Phe	Phe	Thr		
							195				200		205				
ggc	cgc	ctc	act	gac	tgg	att	cta	caa	gat	ggc	tca	gcc	gat	acc	ttc		672
Gly	Arg	Leu	Thr	Asp	Trp	Ile	Leu	Gln	Asp	Gly	Ser	Ala	Asp	Thr	Phe		
							210				215		220				
act	cga	aac	tta	act	ctc	atg	tcc	att	ctc	acc	ata	gcc	agt	gca	gtg		720
Thr	Arg	Asn	Leu	Thr	Leu	Met	Ser	Ile	Leu	Thr	Ile	Ala	Ser	Ala	Val		
							225				230		235		240		
ctg	gag	ttc	gtg	ggt	gac	ggg	atc	tat	aac	aac	acc	atg	ggc	cac	gtg		768
Leu	Glu	Phe	Val	Gly	Asp	Gly	Ile	Tyr	Asn	Asn	Thr	Met	Gly	His	Val		
							245				250		255				
cac	agc	cac	ttg	cag	gga	gag	gtg	ttt	ggg	gct	gtc	ctg	cgc	cag	gag		816
His	Ser	His	Leu	Gln	Gly	Glu	Val	Phe	Gly	Ala	Val	Leu	Arg	Gln	Glu		
							260				265		270				

acg gag ttt ttc caa cag aac cag aca ggt aac atc atg tct cgg gta Thr Glu Phe Phe Gln Gln Asn Gln Thr Gly Asn Ile Met Ser Arg Val 275 280 285	864
aca gag gac acg tcc acc ctg agt gat tct ctg agt gag aat ctg agc Thr Glu Asp Thr Ser Thr Leu Ser Asp Ser Leu Ser Glu Asn Leu Ser 290 295 300	912
tta ttt ctg tgg tac ctg gtg cga ggc cta tgt ctc ttg ggg atc atg Leu Phe Leu Trp Tyr Leu Val Arg Gly Leu Cys Leu Leu Gly Ile Met 305 310 315 320	960
ctc tgg gga tca gtg tcc ctc acc atg gtc acc ctg gtc acc ctg cct Leu Trp Gly Ser Val Ser Leu Thr Met Val Thr Leu Val Thr Leu Pro 325 330 335	1008
ctg ctt ttc ctt ctg ccc aag aag gtg gga aaa tgg tac cag ttg ctg Leu Leu Phe Ieu Leu Pro Lys Lys Val Gly Lys Trp Tyr Gln Leu Leu 340 345 350	1056
gaa gtg cag gtg cgg gaa tct ctg gca aag tcc agc cag gtg gcc att Glu Val Gln Val Arg Glu Ser Leu Ala Lys Ser Ser Gln Val Ala Ile 355 360 365	1104
gag gct ctg tcg gcc atg cct aca gtt cga agc ttt gcc aac gag gag Glu Ala Leu Ser Ala Met Pro Thr Val Arg Ser Phe Ala Asn Glu Glu 370 375 380	1152
ggc gaa gcc cag aag ttt agg gaa aag ctg caa gaa ata aag aca ctc Gly Glu Ala Gln Lys Phe Arg Glu Lys Leu Gln Glu Ile Lys Thr Leu 385 390 395 400	1200
aac cag aag gag gct gtg gcc tat gca gtc aac tcc tgg acc act agt Asn Gln Lys Glu Ala Val Ala Tyr Ala Val Asn Ser Trp Thr Thr Ser 405 410 415	1248
att tca ggt atg ctg ctg aaa gtg gga atc ctc tac att ggt ggg cag Ile Ser Gly Met Leu Leu Lys Val Gly Ile Leu Tyr Ile Gly Gln 420 425 430	1296
ctg gtg acc agt ggg gct gta agc agt ggg aac ctt gtc aca ttt gtt Leu Val Thr Ser Gly Ala Val Ser Ser Gly Asn Leu Val Thr Phe Val 435 440 445	1344
ctc tac cag atg cag ttc acc cag gct ttg gag gta ctg ctc tcc atc Leu Tyr Gln Met Gln Phe Thr Gln Ala Leu Glu Val Leu Leu Ser Ile 450 455 460	1392
tac ccc aga gta cag aag gct gtg ggc tcc tca gag aaa ata ttt gag Tyr Pro Arg Val Gln Lys Ala Val Gly Ser Ser Glu Lys Ile Phe Glu 465 470 475 480	1440
tac ctg gac cgc acc cct cgc tgc cca ccc agt ggt ctg ttg act ccc Tyr Leu Asp Arg Thr Pro Arg Cys Pro Pro Ser Gly Leu Leu Thr Pro 485 490 495	1488
tta cac ttg gag ggc ctt gtc cag ttc caa gat gtc tcc ttt gcc tac Leu His Leu Glu Gly Leu Val Gln Phe Gln Asp Val Ser Phe Ala Tyr 500 505 510	1536

cca aac cgc cca gat gtc tta gtg cta cag ggg ctg aca ttc acc cta		1584	
Pro Asn Arg Pro Asp Val Leu Val Leu Gln Gly Leu Thr Phe Thr Leu			
515	520	525	
cgc cct ggc gag gtg acg gcg ctg gtg gga ccc aat ggg tct ggg aag		1632	
Arg Pro Gly Glu Val Thr Ala Leu Val Gly Pro Asn Gly Ser Gly Lys			
530	535	540	
agc aca gtg gct gcc ctg ctg cag aat ctg tac cag ccc acc ggg gga		1680	
Ser Thr Val Ala Ala Leu Leu Gln Asn Leu Tyr Gln Pro Thr Gly Gly			
545	550	555	560
cag ctg ctg ttg gat ggg aag ccc ctt ccc caa tat gag cac cgc tac		1728	
Gln Leu Leu Asp Gly Lys Pro Leu Pro Gln Tyr Glu His Arg Tyr			
565	570	575	
ctg cac agg cag gtg gct gca gtg gga caa gag cca cag gta ttt gga		1776	
Leu His Arg Gln Val Ala Ala Val Gly Gln Glu Pro Gln Val Phe Gly			
580	585	590	
aga agt ctt caa gaa aat att gcc tat ggc ctg acc cag aag cca act		1824	
Arg Ser Leu Gln Glu Asn Ile Ala Tyr Gly Leu Thr Gln Lys Pro Thr			
595	600	605	
atg gag gaa atc aca gct gct gca gta aag tct ggg gcc cat agt ttc		1872	
Met Glu Glu Ile Thr Ala Ala Val Lys Ser Gly Ala His Ser Phe			
610	615	620	
atc tct gga ctc cct cag ggc tat gac aca gag gta ggc gag gct ggg		1920	
Ile Ser Gly Leu Pro Gln Gly Tyr Asp Thr Glu Val Gly Glu Ala Gly			
625	630	635	640
agc cag ctg tca ggg ggt cag caa cag gca gtg gcg ttg gcc cga gca		1968	
Ser Gln Leu Ser Gly Gly Gln Gln Ala Val Ala Leu Ala Arg Ala			
645	650	655	
ttg atc cgg aaa ccg tgt gta ctt atc ctg gat gat gat gcc acc agt gcc		2016	
Leu Ile Arg Lys Pro Cys Val Leu Ile Leu Asp Asp Ala Thr Ser Ala			
660	665	670	
ctg qat gca aac agc cag tta cag gtg gag cag ctc ctg tac gaa agc		2064	
Leu Asp Ala Asn Ser Gln Leu Gln Val Glu Gln Leu Leu Tyr Glu Ser			
675	680	685	
cct gag cgg tac tcc cgc tca gtg ctt ctc atc acc cag cac ctc agc		2112	
Pro Glu Arg Tyr Ser Arg Ser Val Leu Leu Ile Thr Gln His Leu Ser			
690	695	700	
ctg gtg gag cag gct gac cac atc ctc ttt ctg gaa gga ggc gct atc		2160	
Leu Val Glu Gln Ala Asp His Ile Leu Phe Leu Glu Gly Gly Ala Ile			
705	710	715	720
cgg gag ggg gga acc cac cag cag ctc atg gag aaa aag ggg tgc tac		2208	
Arg Glu Gly Gly Thr His Gln Gln Leu Met Glu Lys Lys Gly Cys Tyr			
725	730	735	
tgg gcc atg gtg cag gct cct gca gat gct cca gaa tga		2247	
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Trp Val Leu Leu Arg Thr Ala Leu Pro Arg Ile Phe Ser Leu Leu Val
35 40 45

Pro Thr Ala Leu Pro Leu Leu Arg Val Trp Ala Val Gly Leu Ser Arg
50 55 60

Trp Ala Val Leu Trp Leu Gly Ala Cys Gly Val Leu Arg Ala Thr Val
65 70 75 80

Gly Ser Lys Ser Glu Asn Ala Gly Ala Gln Gly Trp Leu Ala Ala Leu
85 90 95

Lys Pro Leu Ala Ala Ala Leu Gly Leu Ala Leu Pro Gly Leu Ala Leu
100 105 110

Phe Arg Glu Leu Ile Ser Trp Gly Ala Pro Gly Ser Ala Asp Ser Thr
115 120 125

Arg Leu Leu His Trp Gly Ser His Pro Thr Ala Phe Val Val Ser Tyr
130 135 140

Ala Ala Ala Leu Pro Ala Ala Ala Leu Trp His Lys Leu Gly Ser Leu
145 150 155 160

Trp Val Pro Gly Gly Gln Gly Ser Gly Asn Pro Val Arg Arg Leu
165 170 175

Leu Gly Cys Leu Gly Ser Glu Thr Arg Arg Leu Ser Leu Phe Leu Val
180 185 190

Leu Val Val Leu Ser Ser Leu Gly Glu Met Ala Ile Pro Phe Phe Thr
195 200 205

Gly Arg Leu Thr Asp Trp Ile Leu Gln Asp Gly Ser Ala Asp Thr Phe
210 215 220

Thr Arg Asn Leu Thr Leu Met Ser Ile Leu Thr Ile Ala Ser Ala Val
225 230 235 240

Leu Glu Phe Val Gly Asp Gly Ile Tyr Asn Asn Thr Met Gly His Val
245 250 255

His Ser His Leu Gln Gly Glu Val Phe Gly Ala Val Leu Arg Gln Glu
260 265 270

Thr Glu Phe Phe Gln Gln Asn Gln Thr Gly Asn Ile Met Ser Arg Val
275 280 285

Thr Glu Asp Thr Ser Thr Leu Ser Asp Ser Leu Ser Glu Asn Leu Ser
290 295 300

Leu Phe Leu Trp Tyr Leu Val Arg Gly Leu Cys Leu Leu Gly Ile Met
305 310 315 320

Leu Trp Gly Ser Val Ser Leu Thr Met Val Thr Leu Val Thr Leu Pro
325 330 335

Leu Leu Phe Leu Leu Pro Lys Lys Val Gly Lys Trp Tyr Gln Leu Leu
340 345 350

Glu Val Gln Val Arg Glu Ser Leu Ala Lys Ser Ser Gln Val Ala Ile
355 360 365

Glu Ala Leu Ser Ala Met Pro Thr Val Arg Ser Phe Ala Asn Glu Glu
370 375 380

Gly Glu Ala Gln Lys Phe Arg Glu Lys Leu Gln Glu Ile Lys Thr Leu
385 390 395 400

Asn Gln Lys Glu Ala Val Ala Tyr Ala Val Asn Ser Trp Thr Thr Ser
405 410 415

Ile Ser Gly Met Leu Leu Lys Val Gly Ile Leu Tyr Ile Gly Gly Gln
420 425 430

Leu Val Thr Ser Gly Ala Val Ser Ser Gly Asn Leu Val Thr Phe Val
435 440 445

Leu Tyr Gln Met Gln Phe Thr Gln Ala Leu Glu Val Leu Leu Ser Ile
450 455 460

Tyr Pro Arg Val Gln Lys Ala Val Gly Ser Ser Glu Lys Ile Phe Glu
465 470 475 480

Tyr Leu Asp Arg Thr Pro Arg Cys Pro Pro Ser Gly Leu Leu Thr Pro
485 490 495

Leu His Leu Glu Gly Leu Val Gln Phe Gln Asp Val Ser Phe Ala Tyr
500 505 510

Pro Asn Arg Pro Asp Val Leu Val Leu Gln Gly Leu Thr Phe Thr Leu
515 520 525

Arg Pro Gly Glu Val Thr Ala Leu Val Gly Pro Asn Gly Ser Gly Lys
530 535 540

Ser Thr Val Ala Ala Leu Leu Gln Asn Leu Tyr Gln Pro Thr Gly Gly
545 550 555 560

Gln Leu Leu Leu Asp Gly Lys Pro Leu Pro Gln Tyr Glu His Arg Tyr
565 570 575

Leu His Arg Gln Val Ala Ala Val Gly Gln Glu Pro Gln Val Phe Gly
580 585 590

Arg Ser Leu Gln Glu Asn Ile Ala Tyr Gly Leu Thr Gln Lys Pro Thr
595 600 605

Met Glu Glu Ile Thr Ala Ala Val Lys Ser Gly Ala His Ser Phe
610 615 620

Ile Ser Gly Leu Pro Gln Gly Tyr Asp Thr Glu Val Gly Glu Ala Gly
625 630 635 640

Ser Gln Leu Ser Gly Gly Gln Gln Ala Val Ala Leu Ala Arg Ala
645 650 655

Leu Ile Arg Lys Pro Cys Val Leu Ile Leu Asp Asp Ala Thr Ser Ala
660 665 670

Leu Asp Ala Asn Ser Gln Leu Gln Val Glu Gln Leu Leu Tyr Glu Ser
675 680 685

Pro Glu Arg Tyr Ser Arg Ser Val Leu Leu Ile Thr Gln His Leu Ser
690 695 700

Leu Val Glu Gln Ala Asp His Ile Leu Phe Leu Glu Gly Gly Ala Ile
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725 730 735

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Met Ser Lys Gly Pro Ala Val Gly Ile Asp Leu Gly Thr Thr Tyr
1 5 10 15
tct tgt gtg ggt gtt ttc cag cac gga aaa gtc gag ata att gcc aat 157
Ser Cys Val Gly Val Phe Gln His Gly Lys Val Glu Ile Ile Ala Asn
20 25 30
gat cag gga aac cga acc act cca agc tat gtc gcc ttt acg gac act 205
Asp Gln Gly Asn Arg Thr Thr Pro Ser Tyr Val Ala Phe Thr Asp Thr
35 40 45
gaa cgg ttg atc ggt gat gcc gca aag aat caa gtt gca atg aac ccc 253
Glu Arg Leu Ile Gly Asp Ala Ala Lys Asn Gin Val Ala Met Asn Pro
50 55 60
acc aac aca gtt ttt gat gcc aaa cgt ctg att gga cgc aga ttt gat 301
Thr Asn Thr Val Phe Asp Ala Lys Arg Leu Ile Gly Arg Arg Phe Asp
65 70 75
gat gct gtt gtc cag tct gat atg aaa cat tgg ccc ttt atg gtg gtg 349
Asp Ala Val Val Gln Ser Asp Met Lys His Trp Pro Phe Met Val Val
80 85 90 95
aat gat gct ggc agg ccc aag gtc caa gta gaa tac aag gga gag acc 397
Asn Asp Ala Gly Arg Pro Lys Val Gln Val Glu Tyr Lys Gly Glu Thr
100 105 110
aaa agc ttc tat cca gag gag gtg tct tct atg gtt ctg aca aag atg 445
Lys Ser Phe Tyr Pro Glu Glu Val Ser Ser Met Val Leu Thr Lys Met
115 120 125
aag gaa att gca gaa gcc tac ctt ggg aag act gtt acc aat gct gtg 493
Lys Glu Ile Ala Glu Ala Tyr Leu Gly Lys Thr Val Thr Asn Ala Val
130 135 140
gtc aca gtg cca gct tac ttt aat gac tct cag cgt cag gct acc aaa 541
Val Thr Val Pro Ala Tyr Phe Asn Asp Ser Gln Arg Gln Ala Thr Lys
145 150 155
gat gct gga act att gct ggt ctc aat gta ctt aga att att aat gag 589
Asp Ala Gly Thr Ile Ala Gly Leu Asn Val Leu Arg Ile Ile Asn Glu

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cca act gct gct att gct tac ggc tta gac aaa aag gtt gga gca Pro Thr Ala Ala Ala Ile Ala Tyr Gly Leu Asp Lys Lys Val Gly Ala 180		185		190
gaa aga aac gtg ctc atc ttt gac ctg gga ggt ggc act ttt gat gtg Glu Arg Asn Val Leu Ile Phe Asp Leu Gly Gly Thr Phe Asp Val 195		200		205
tca atc ctc act att gag gat gga atc ttt gag gtc aag tct aca gct Ser Ile Leu Thr Ile Glu Asp Gly Ile Phe Glu Val Lys Ser Thr Ala 210		215		220
gga gac acc cac ttg ggt gga gaa gat ttt gac aac cga atg gtc aac Gly Asp Thr His Leu Gly Gly Glu Asp Phe Asp Asn Arg Met Val Asn 225		230		235
cat ttt att gct gag ttt aag cgc aag cat aag aag gac atc agt gag His Phe Ile Ala Glu Phe Lys Arg Lys His Lys Lys Asp Ile Ser Glu 240		245		250
aac aag aga gct gta aga cgc ctc cgt act gct tgt gaa cgt gct aag Asn Lys Arg Ala Val Arg Arg Leu Arg Thr Ala Cys Glu Arg Ala Lys 260		265		270
cgt acc ctc tct tcc agc acc cag gcc agt att gag atc gat tct ctc Arg Thr Leu Ser Ser Thr Gln Ala Ser Ile Glu Ile Asp Ser Leu 275		280		285
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gaa ctg aat gct gac ctg ttc cgt ggc acc ctg gac cca gta gag aaa Glu Leu Asn Ala Asp Leu Phe Arg Gly Thr Leu Asp Pro Val Glu Lys 305		310		315
gcc ctt cga gat gcc aaa cta gac aag tca cag att cat gat att gtc Ala Leu Arg Asp Ala Lys Leu Asp Lys Ser Gln Ile His Asp Ile Val 320		325		330
ctg gtt ggt ggt tct act cgt atc ccc aag att cag aag ctt ctc caa Leu Val Gly Gly Ser Thr Arg Ile Pro Lys Ile Gln Lys Leu Leu Gln 340		345		350
gac ttc ttc aat gga aaa gaa ctg aat aag agc atc aac cct gat gaa Asp Phe Phe Asn Gly Lys Glu Leu Asn Lys Ser Ile Asn Pro Asp Glu 355		360		365
gct gtt gct tat ggt gca gct gtc cag gca gcc atc ttg tct gga gac Ala Val Ala Tyr Gly Ala Ala Val Gln Ala Ala Ile Leu Ser Gly Asp 370		375		380
aag tct gag aat gtt caa gat ttg ctg ctc ttg gat gtc act cct ctt Lys Ser Glu Asn Val Gln Asp Leu Leu Leu Asp Val Thr Pro Leu 385		390		395
tcc ctt ggt att gaa act gct ggt gga gtc atg act gtc ctc atc aag Ser Leu Gly Ile Glu Thr Ala Gly Gly Val Met Thr Val Leu Ile Lys				1309

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tct gac aac cag cct ggt gtg ctt att cag gtt tat gaa ggc gag cgt Ser Asp Asn Gln Pro Gly Val Leu Ile Gln Val Tyr Glu Gly Glu Arg 435	440		445	1405
gcc atg aca aag gat aac aac ctg ctt ggc aag ttt gaa ctc aca ggc Ala Met Thr Lys Asp Asn Asn Leu Leu Gly Lys Phe Glu Leu Thr Gly 450	455		460	1453
ata cct cct gca ccc cga ggt gtt cct cag att gaa gtc act ttt gac Ile Pro Pro Ala Pro Arg Gly Val Pro Gln Ile Glu Val Thr Phe Asp 465	470	475		1501
att gat gcc aat ggt ata ctc aat gtc tct gct gtg gac aag agt acg Ile Asp Ala Asn Gly Ile Leu Asn Val Ser Ala Val Asp Lys Ser Thr 480	485	490	495	1549
gga aaa gag aac aag att act atc act aat gac aag ggc cgt ttg agc Gly Lys Glu Asn Lys Ile Thr Ile Asn Asp Lys Gly Arg Leu Ser 500		505	510	1597
aag gaa gac att gaa cgt atg gtc cag gaa gct gag aag tac aaa gct Lys Glu Asp Ile Glu Arg Met Val Gln Glu Ala Glu Lys Tyr Lys Ala 515	520		525	1645
gaa gat gag aag cag agg gac aag gtg tca tcc aag aat tca ctt gag Glu Asp Glu Lys Gln Arg Asp Lys Val Ser Ser Lys Asn Ser Leu Glu 530	535	540		1693
tcc tat gcc ttc aac atg aaa gca act gtt gaa gat gag aaa ctt caa Ser Tyr Ala Phe Asn Met Lys Ala Thr Val Glu Asp Glu Lys Leu Gln 545	550	555		1741
ggc aag att aac gat gag gac aaa cag aag att ctg gac aag tgt aat Gly Lys Ile Asn Asp Glu Asp Lys Gln Lys Ile Leu Asp Lys Cys Asn 560	565	570	575	1789
gaa att atc aac tgg ctt gat aag aat cag act gct gag aag gaa gaa Glu Ile Ile Asn Trp Leu Asp Lys Asn Gln Thr Ala Glu Lys Glu Glu 580	585	590		1837
ttt gaa cat caa cag aaa gag ctg gag aaa gtt tgc aac ccc atc atc Phe Glu His Gln Gln Lys Glu Leu Glu Lys Val Cys Asn Pro Ile Ile 595	600	605		1885
acc aag ctg tac cag agt gca gga ggc atg cca gga gga atg cct ggg Thr Lys Leu Tyr Gln Ser Ala Gly Gly Met Pro Gly Gly Met Pro Gly 610	615	620		1933
gga ttt cct ggt ggt gga gct cct ctc ggt ggt gct tcc tca ggg Gly Phe Pro Gly Gly Ala Pro Pro Ser Gly Gly Ala Ser Ser Gly 625	630	635		1981
ccc acc att gaa gag gtt gat taa gccaaccaag tctatgtta gcattgttcc Pro Thr Ile Glu Glu Val Asp				2035

640 645
 acacatttaa aacatggaa ggacctaaat tcgttagcaaa ttctgtggca 2085
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 Cys Val Gly Val Phe Gln His Gly Lys Val Glu Ile Ile Ala Asn Asp
 20 25 30
 Gln Gly Asn Arg Thr Thr Pro Ser Tyr Val Ala Phe Thr Asp Thr Glu
 35 40 45
 Arg Leu Ile Gly Asp Ala Ala Lys Asn Gln Val Ala Met Asn Pro Thr
 50 55 60
 Asn Thr Val Phe Asp Ala Lys Arg Leu Ile Gly Arg Arg Phe Asp Asp
 65 70 75 80
 Ala Val Val Gln Ser Asp Met Lys His Trp Pro Phe Met Val Val Asn
 85 90 95
 Asp Ala Gly Arg Pro Lys Val Gln Val Glu Tyr Lys Gly Glu Thr Lys
 100 105 110
 Ser Phe Tyr Pro Glu Glu Val Ser Ser Met Val Leu Thr Lys Met Lys
 115 120 125
 Glu Ile Ala Glu Ala Tyr Leu Gly Lys Thr Val Thr Asn Ala Val Val
 130 135 140
 Thr Val Pro Ala Tyr Phe Asn Asp Ser Gln Arg Gln Ala Thr Lys Asp
 145 150 155 160
 Ala Gly Thr Ile Ala Gly Leu Asn Val Leu Arg Ile Ile Asn Glu Pro
 165 170 175
 Thr Ala Ala Ala Ile Ala Tyr Gly Leu Asp Lys Lys Val Gly Ala Glu
 180 185 190
 Arg Asn Val Leu Ile Phe Asp Leu Gly Gly Gly Thr Phe Asp Val Ser
 195 200 205
 Ile Leu Thr Ile Glu Asp Gly Ile Phe Glu Val Lys Ser Thr Ala Gly

C₁ C₂ C₃ C₄ C₅ C₆ C₇ C₈ C₉ C₁₀ C₁₁ C₁₂ C₁₃ C₁₄ C₁₅ C₁₆ C₁₇ C₁₈ C₁₉ C₂₀

210 215 220

Asp Thr His Leu Gly Gly Glu Asp Phe Asp Asn Arg Met Val Asn His
225 230 235 240

Phe Ile Ala Glu Phe Lys Arg Lys His Lys Lys Asp Ile Ser Glu Asn
245 250 255

Lys Arg Ala Val Arg Arg Leu Arg Thr Ala Cys Glu Arg Ala Lys Arg
260 265 270

Thr Leu Ser Ser Ser Thr Gln Ala Ser Ile Glu Ile Asp Ser Leu Tyr
275 280 285

Glu Gly Ile Asp Phe Tyr Thr Ser Ile Thr Arg Ala Arg Phe Glu Glu
290 295 300

Leu Asn Ala Asp Leu Phe Arg Gly Thr Leu Asp Pro Val Glu Lys Ala
305 310 315 320

Leu Arg Asp Ala Lys Leu Asp Lys Ser Gln Ile His Asp Ile Val Leu
325 330 335

Val Gly Gly Ser Thr Arg Ile Pro Lys Ile Gln Lys Leu Leu Gln Asp
340 345 350

Phe Phe Asn Gly Lys Glu Leu Asn Lys Ser Ile Asn Pro Asp Glu Ala
355 360 365

Val Ala Tyr Gly Ala Ala Val Gln Ala Ala Ile Leu Ser Gly Asp Lys
370 375 380

Ser Glu Asn Val Gln Asp Leu Leu Leu Asp Val Thr Pro Leu Ser
385 390 395 400

Leu Gly Ile Glu Thr Ala Gly Gly Val Met Thr Val Leu Ile Lys Arg
405 410 415

Asn Thr Thr Ile Pro Thr Lys Gln Thr Gln Thr Phe Thr Thr Tyr Ser
420 425 430

Asp Asn Gln Pro Gly Val Leu Ile Gln Val Tyr Glu Gly Glu Arg Ala
435 440 445

Met Thr Lys Asp Asn Asn Leu Leu Gly Lys Phe Glu Leu Thr Gly Ile

OP C3 P2 M2 A2 P1 S2 D2 K2 F2 I2 T2

450 455 460

Pro Pro Ala Pro Arg Gly Val Pro Gln Ile Glu Val Thr Phe Asp Ile
465 470 475 480

Asp Ala Asn Gly Ile Leu Asn Val Ser Ala Val Asp Lys Ser Thr Gly
485 490 495

Lys Glu Asn Lys Ile Thr Ile Thr Asn Asp Lys Gly Arg Leu Ser Lys
500 505 510

Glu Asp Ile Glu Arg Met Val Gln Glu Ala Glu Lys Tyr Lys Ala Glu
515 520 525

Asp Glu Lys Gln Arg Asp Lys Val Ser Ser Lys Asn Ser Leu Glu Ser
530 535 540

Tyr Ala Phe Asn Met Lys Ala Thr Val Glu Asp Glu Lys Leu Gln Gly
545 550 555 560

Lys Ile Asn Asp Glu Asp Lys Gln Lys Ile Leu Asp Lys Cys Asn Glu
565 570 575

Ile Ile Asn Trp Leu Asp Lys Asn Gln Thr Ala Glu Lys Glu Glu Phe
580 585 590

Glu His Gln Gln Lys Glu Leu Glu Lys Val Cys Asn Pro Ile Ile Thr
595 600 605

Lys Leu Tyr Gln Ser Ala Gly Gly Met Pro Gly Gly Met Pro Gly Gly
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Phe Pro Gly Gly Ala Pro Pro Ser Gly Gly Ala Ser Ser Gly Pro
625 630 635 640

Thr Ile Glu Glu Val Asp
645

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tgataaattt cattgaataa gaactaaatt agtttataat ttattattag tatcctgtgg 120
atatgacata gagtataagg aggggtttt atg aac aaa aat gtg ttg aag ttt 174

Met Asn Lys Asn Val Leu Lys Phe		
1	5	
atg gtc ttt ata atg tta tta aat atc atc aca cct tta ttt aat aaa		222
Met Val Phe Ile Met Leu Leu Asn Ile Ile Thr Pro Leu Phe Asn Lys		
10	15	20
aat gaa gca ttt gca gca cga gat att tca tca acg aat gtt aca gat		270
Asn Glu Ala Phe Ala Ala Arg Asp Ile Ser Ser Thr Asn Val Thr Asp		
25	30	35
tta act gta tca ccg tct aag ata gaa gat ggt ggt aaa acg aca gta		318
Leu Thr Val Ser Pro Ser Lys Ile Glu Asp Gly Gly Lys Thr Thr Val		
45	50	55
aaa atg acg ttc gac gat aaa aat gga aaa ata caa aat ggt gac atg		366
Lys Met Thr Phe Asp Asp Lys Asn Gly Lys Ile Gln Asn Gly Asp Met		
60	65	70
att aaa gtg gca tgg ccg aca acg ggt aca gta aag ata gag ggt tat		414
Ile Lys Val Ala Trp Pro Thr Ser Gly Thr Val Lys Ile Glu Gly Tyr		
75	80	85
agt aaa aca gta cca tta act gtt aaa ggt gaa cag gtg ggt caa gca		462
Ser Lys Thr Val Pro Leu Thr Val Lys Gly Glu Gln Val Gly Gln Ala		
90	95	100
gtt att aca cca gac ggt gca aca att aca ttc aat gat aaa gta gaa		510
Val Ile Thr Pro Asp Gly Ala Thr Ile Thr Phe Asn Asp Lys Val Glu		
105	110	115
120		
aaa tta agt gat gtt tcg gga ttt gca gaa ttt gaa gta caa gga aga		558
Lys Leu Ser Asp Val Ser Gly Phe Ala Glu Phe Glu Val Gln Gly Arg		
125	130	135
aat tta acg caa aca aat act tca gat gac aaa gta gct acg ata aca		606
Asn Leu Thr Gln Thr Asn Thr Ser Asp Asp Lys Val Ala Thr Ile Thr		
140	145	150
tct ggg aat aaa tca acg aat gtt acg gtt cat aaa agt gaa gcg gga		654
Ser Gly Asn Lys Ser Thr Asn Val Thr Val His Lys Ser Glu Ala Gly		
155	160	165
aca agt agt gtt ttc tat tat aaa acg gga gat atg cta cca gaa gat		702
Thr Ser Ser Val Phe Tyr Tyr Lys Thr Gly Asp Met Leu Pro Glu Asp		
170	175	180
acg aca cat gta cga tgg ttt tta aat att aac aat gaa aaa agt tat		750
Thr Thr His Val Arg Trp Phe Leu Asn Ile Asn Asn Glu Lys Ser Tyr		
185	190	195
200		
gta tcg aaa gat att act ata aag gat cag att caa ggt gga cag cag		798
Val Ser Lys Asp Ile Thr Ile Lys Asp Gln Ile Gln Gly Gly Gln Gln		
205	210	215
tta gat tta agc aca tta aac att aat gtg aca ggt aca cat agc aat		846
Leu Asp Leu Ser Thr Leu Asn Ile Asn Val Thr Gly Thr His Ser Asn		
220	225	230
tat tat agt gga caa agt gca att act gat ttt gaa aaa gcc ttt cca		894

Tyr	Tyr	Ser	Gly	Gln	Ser	Ala	Ile	Thr	Asp	Phe	Glu	Lys	Ala	Phe	Pro	
235							240					245				
ggt	tct	aaa	ata	act	gtt	gat	aat	acg	aag	aac	aca	att	gat	gta	aca	942
Gly	Ser	Lys	Ile	Thr	Val	Asp	Asn	Thr	Lys	Asn	Thr	Ile	Asp	Val	Thr	
250							255					260				
att	cca	caa	ggc	tat	ggg	tca	tat	aat	agt	ttt	tca	att	aac	tac	aaa	990
Ile	Pro	Gln	Gly	Tyr	Gly	Ser	Tyr	Asn	Ser	Phe	Ser	Ile	Asn	Tyr	Lys	
265							270				275				280	
acc	aaa	att	acg	aat	gaa	cag	caa	aaa	gag	ttt	gtt	aat	aat	tca	caa	1038
Thr	Lys	Ile	Thr	Asn	Glu	Gln	Gln	Lys	Glu	Phe	Val	Asn	Asn	Ser	Gln	
							285			290				295		
gct	tgg	tat	caa	gag	cat	ggt	aag	gaa	gtg	aac	ggg	aaa	tca	ttt		1086
Ala	Trp	Tyr	Gln	Glu	His	Gly	Lys	Glu	Glu	Val	Asn	Gly	Lys	Ser	Phe	
							300		305				310			
aat	cat	act	gtg	cac	aat	att	aat	gct	aat	gcc	ggt	att	gaa	ggt	act	1134
Asn	His	Thr	Val	His	Asn	Ile	Asn	Ala	Asn	Ala	Gly	Ile	Glu	Gly	Thr	
							315		320				325			
gta	aaa	ggt	gaa	tta	aaa	gtt	tta	aaa	cag	gat	aaa	gat	acc	aag	gct	1182
Val	Lys	Gly	Glu	Leu	Lys	Val	Leu	Lys	Gln	Asp	Lys	Asp	Thr	Lys	Ala	
							330		335				340			
cct	ata	gct	aat	gta	aaa	ttt	aaa	ctt	tct	aaa	aaa	gat	gga	tca	gtt	1230
Pro	Ile	Ala	Asn	Val	Lys	Phe	Lys	Leu	Ser	Lys	Lys	Asp	Gly	Ser	Val	
							345		350				355			360
gta	aag	gac	aat	caa	aaa	gaa	att	gag	att	ata	aca	gat	gca	aac	ggt	1278
Val	Lys	Asp	Asn	Gln	Lys	Glu	Ile	Glu	Ile	Ile	Thr	Asp	Ala	Asn	Gly	
							365		370				375			
att	gct	aat	att	aaa	gcg	ttg	cct	agt	gga	gac	tat	att	tta	aaa	gaa	1326
Ile	Ala	Asn	Ile	Lys	Ala	Leu	Pro	Ser	Gly	Asp	Tyr	Ile	Leu	Lys	Glu	
							380		385				390			
ata	gag	gcg	cca	cga	ccg	tat	aca	ttt	gat	aag	gat	aaa	gaa	tat	ccg	1374
Ile	Glu	Ala	Pro	Arg	Pro	Tyr	Thr	Phe	Asp	Lys	Asp	Lys	Glu	Tyr	Pro	
							395		400				405			
ttt	act	atg	aaa	gat	aca	gat	aat	cag	gga	tat	ttt	acg	act	att	gaa	1422
Phe	Thr	Met	Lys	Asp	Thr	Asp	Asn	Gln	Gly	Tyr	Phe	Thr	Thr	Ile	Glu	
							410		415				420			
aat	gca	aaa	gcg	ata	gaa	aaa	aca	aaa	gat	gtt	tct	gct	caa	aag	gtt	1470
Asn	Ala	Lys	Ala	Ile	Glu	Lys	Thr	Lys	Asp	Val	Ser	Ala	Gln	Lys	Val	
							425		430				435			440
tgg	gaa	ggc	act	caa	aaa	gtg	aaa	cca	acg	att	tat	ttc	aag	ttg	tac	1518
Trp	Glu	Gly	Thr	Gln	Lys	Val	Lys	Pro	Thr	Ile	Tyr	Phe	Lys	Leu	Tyr	
							445		450				455			
aaa	caa	gat	gac	aat	caa	aat	aca	aca	cca	gta	gac	aaa	gca	gag	att	1566
Lys	Gln	Asp	Asp	Asn	Gln	Asn	Thr	Thr	Pro	Val	Asp	Lys	Ala	Glu	Ile	
							460		465				470			
aaa	aaa	tta	gaa	gat	gga	acg	aca	aaa	gtg	aca	tgg	tct	aat	ctt	ccg	1614

Lys Lys Leu Glu Asp Gly Thr Thr Lys Val Thr Trp Ser Asn Leu Pro			
475	480	485	
gaa aat gac aaa aat ggc aag gct att aaa tat tta gtt aaa gaa gta		1662	
Glu Asn Asp Lys Asn Gly Lys Ala Ile Lys Tyr Leu Val Lys Glu Val			
490	495	500	
aat gct caa ggt gaa gat aca aca cca gaa gga tat act aaa aaa gaa		1710	
Asn Ala Gln Gly Glu Asp Thr Thr Pro Glu Gly Tyr Thr Lys Lys Glu			
505	510	515	520
aat ggt tta gtg gtt act aat act gaa aaa cca atc gaa aca aca tca		1758	
Asn Gly Leu Val Val Thr Asn Thr Glu Lys Pro Ile Glu Thr Thr Ser			
525	530	535	
att agt ggt gaa aaa gta tgg gac gac aaa gac aat caa gat ggt aag		1806	
Ile Ser Gly Glu Lys Val Trp Asp Asp Lys Asp Asn Gln Asp Gly Lys			
540	545	550	
aga cca gaa aaa gtc agt gtg aat tta ttg gct aac ggg gag aaa gta		1854	
Arg Pro Glu Lys Val Ser Val Asn Leu Leu Ala Asn Gly Glu Lys Val			
555	560	565	
aaa acg tta gac gtg aca tct gaa aca aac tgg aag tac gaa ttt aaa		1902	
Lys Thr Leu Asp Val Thr Ser Glu Thr Asn Trp Lys Tyr Glu Phe Lys			
570	575	580	
gac tta ccg aag tat gat gaa gga aag aaa ata gaa tat aca gtg acc		1950	
Asp Leu Pro Lys Tyr Asp Glu Gly Lys Lys Ile Glu Tyr Thr Val Thr			
585	590	595	600
gaa gat cac gta aaa gac tac aca aca gac atc aac ggt acg aca ata		1998	
Glu Asp His Val Lys Asp Tyr Thr Thr Asp Ile Asn Gly Thr Thr Ile			
605	610	615	
acg aac aag tat aca cca gga gag aca tcg gca aca gta aca aaa aat		2046	
Thr Asn Lys Tyr Thr Pro Gly Glu Thr Ser Ala Thr Val Thr Lys Asn			
620	625	630	
tgg gat gac aat aat aac caa gac gga aaa cga cca act gaa atc aaa		2094	
Trp Asp Asp Asn Asn Gln Asp Gly Lys Arg Pro Thr Glu Ile Lys			
635	640	645	
gtt gag tta tat caa gat gga aaa gca aca gga aaa acg gca ata tta		2142	
Val Glu Leu Tyr Gln Asp Gly Lys Ala Thr Gly Lys Thr Ala Ile Leu			
650	655	660	
aat gaa tct aat aac tgg aca cat acg tgg aca gga tta gat gaa aaa		2190	
Asn Glu Ser Asn Asn Trp Thr His Thr Trp Thr Gly Leu Asp Glu Lys			
665	670	675	680
gca aaa gga caa caa gta aaa tac aca gtc gag gaa tta aca aag gtc		2238	
Ala Lys Gly Gln Gln Val Lys Tyr Thr Val Glu Glu Leu Thr Lys Val			
685	690	695	
aaa ggt tat aca aca cat gtg gat aac aat gat atg ggt aac ttg att		2286	
Lys Gly Tyr Thr Thr His Val Asp Asn Asn Asp Met Gly Asn Leu Ile			
700	705	710	
gtg acg aat aaa tat acg cca gaa aca aca tca att agt ggt gaa aaa		2334	

Val Thr Asn Lys Tyr Thr Pro Glu Thr Thr Ser Ile Ser Gly Glu Lys			
715	720	725	
gta tgg gac gac aaa gac aat caa gat ggt aag aga cca gaa aaa gtc			2382
Val Trp Asp Asp Lys Asp Asn Gln Asp Gly Lys Arg Pro Glu Lys Val			
730	735	740	
agt gtg aat tta ttg gct gat gga gag aaa gta aaa acg tta gac gtg			2430
Ser Val Asn Leu Leu Ala Asp Gly Glu Lys Val Lys Thr Leu Asp Val			
745	750	755	760
aca tct gaa aca aac tgg aag tac gaa ttt aaa gac tta ccg aag tat			2478
Thr Ser Glu Thr Asn Trp Lys Tyr Glu Phe Lys Asp Leu Pro Lys Tyr			
765	770	775	
gat gaa gga aag aaa ata gaa tat aca gtg acc gaa gat cac gta aaa			2526
Asp Glu Gly Lys Lys Ile Glu Tyr Thr Val Thr Glu Asp His Val Lys			
780	785	790	
gac tac aca aca gac atc aac ggt acg aca ata acg aac aag tat aca			2574
Asp Tyr Thr Thr Asp Ile Asn Gly Thr Thr Ile Thr Asn Lys Tyr Thr			
795	800	805	
cca gga gag aca tcg gca aca gta aca aaa aat tgg gat gac aat aat			2622
Pro Gly Glu Thr Ser Ala Thr Val Thr Lys Asn Trp Asp Asp Asn Asn			
810	815	820	
aac caa gac gga aaa cga cca act gaa atc aaa gtt gag tta tat caa			2670
Asn Gln Asp Gly Lys Arg Pro Thr Glu Ile Lys Val Glu Leu Tyr Gln			
825	830	835	840
gat gga aaa gca aca gga aaa acg gca ata tta aat gaa tct aat aac			2718
Asp Gly Lys Ala Thr Gly Lys Thr Ala Ile Leu Asn Glu Ser Asn Asn			
845	850	855	
tgg aca cat acg tgg aca gga tta gat gaa aaa gca aaa gga caa caa			2766
Trp Thr His Thr Trp Thr Gly Leu Asp Glu Lys Ala Lys Gly Gln Gln			
860	865	870	
gta aaa tac aca gtc gag gaa tta aca aag gtc aaa ggt tat aca aca			2814
Val Lys Tyr Thr Val Glu Glu Leu Thr Lys Val Lys Gly Tyr Thr Thr			
875	880	885	
cat gtg gat aac aat gat atg ggc aac ttg att gtg acg aat aaa tat			2862
His Val Asp Asn Asn Asp Met Gly Asn Leu Ile Val Thr Asn Lys Tyr			
890	895	900	
acg cca gaa aca aca tca att agt ggt gaa aaa gta tgg gac gac aaa			2910
Thr Pro Glu Thr Thr Ser Ile Ser Gly Glu Lys Val Trp Asp Asp Lys			
905	910	915	920
gac aat caa gat ggt aag aga cca gaa aaa gtc agt gtg aat tta ttg			2958
Asp Asn Gln Asp Gly Lys Arg Pro Glu Lys Val Ser Val Asn Leu Leu			
925	930	935	
gct aac gga gag aaa gta aaa acg tta gac gtg aca tct gaa aca aac			3006
Ala Asn Gly Glu Lys Val Lys Thr Leu Asp Val Thr Ser Glu Thr Asn			
940	945	950	
tgg aag tac gaa ttt aaa gac tta ccg aag tat gat gaa gga aag aaa			3054

DRAFT PROTEIN SEQUENCE FROM cDNA

Trp Lys Tyr Glu Phe Lys Asp Leu Pro Lys Tyr Asp Glu Gly Lys Lys
955 960 965

ata gaa tat aca gtg acc gaa gat cac gta aaa gac tac aca aca gac 3102
Ile Glu Tyr Thr Val Thr Glu Asp His Val Lys Asp Tyr Thr Thr Asp
970 975 980

atc aac ggt acg aca ata acg aac aag tat aca cca gga gag aca tcg 3150
Ile Asn Gly Thr Thr Ile Thr Asn Lys Tyr Thr Pro Gly Glu Thr Ser
985 990 995 1000

gca aca gta aca aaa aat tgg gat gac aat aat aac caa gac gga 3195
Ala Thr Val Thr Lys Asn Trp Asp Asp Asn Asn Asn Gln Asp Gly
1005 1010 1015

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Lys Arg Pro Thr Glu Ile Lys Val Glu Leu Tyr Gln Asp Gly Lys
1020 1025 1030

gca aca gga aaa acg gca ata tta aat gaa tct aat aac tgg aca 3285
Ala Thr Gly Lys Thr Ala Ile Leu Asn Glu Ser Asn Asn Trp Thr
1035 1040 1045

cat acg tgg aca gga tta gat gaa aaa gca aaa gga caa caa gta 3330
His Thr Trp Thr Gly Leu Asp Glu Lys Ala Lys Gly Gln Gln Val
1050 1055 1060

aaa tac aca gtc gat gaa tta aca aaa gtt aat ggc tat aca acg 3375
Lys Tyr Thr Val Asp Glu Leu Thr Lys Val Asn Gly Tyr Thr Thr
1065 1070 1075

cat gtg gat aac aat gat atg ggt aac ttg att gtg aca aat aaa 3420
His Val Asp Asn Asn Asp Met Gly Asn Leu Ile Val Thr Asn Lys
1080 1085 1090

tat acg ccg aaa aaa ccg aat aaa cca atc tat cct gaa aaa cca 3465
Tyr Thr Pro Lys Lys Pro Asn Lys Pro Ile Tyr Pro Glu Lys Pro
1095 1100 1105

aaa gac aaa aca cca cca act aaa cct gat cat tct aat aaa gtt 3510
Lys Asp Lys Thr Pro Pro Thr Lys Pro Asp His Ser Asn Lys Val
1110 1115 1120

aaa cca act ccc cca gat aag cca tca aaa gtg gat aag gat gat 3555
Lys Pro Thr Pro Pro Asp Lys Pro Ser Lys Val Asp Lys Asp Asp
1125 1130 1135

caa cct aaa gat aat aaa acc aaa cct gaa aat cct cta aaa gaa 3600
Gln Pro Lys Asp Asn Lys Thr Lys Pro Glu Asn Pro Leu Lys Glu
1140 1145 1150

tta cca aaa act ggt atg aag att ata act tca tgg att aca tgg 3645
Leu Pro Lys Thr Gly Met Lys Ile Ile Thr Ser Trp Ile Thr Trp
1155 1160 1165

gta ttt ata ggt ata ttg gga ctg tat tta att tta aga aaa aga 3690
Val Phe Ile Gly Ile Leu Gly Leu Tyr Leu Ile Leu Arg Lys Arg
1170 1175 1180

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Phe Asn Ser

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20 25 30

Ile Ser Ser Thr Asn Val Thr Asp Leu Thr Val Ser Pro Ser Lys Ile
35 40 45

Glu Asp Gly Gly Lys Thr Thr Val Lys Met Thr Phe Asp Asp Lys Asn
50 55 60

Gly Lys Ile Gln Asn Gly Asp Met Ile Lys Val Ala Trp Pro Thr Ser
65 70 75 80

Gly Thr Val Lys Ile Glu Gly Tyr Ser Lys Thr Val Pro Leu Thr Val
85 90 95

Lys Gly Glu Gln Val Gly Gln Ala Val Ile Thr Pro Asp Gly Ala Thr
100 105 110

Ile Thr Phe Asn Asp Lys Val Glu Lys Leu Ser Asp Val Ser Gly Phe
115 120 125

Ala Glu Phe Glu Val Gln Gly Arg Asn Leu Thr Gln Thr Asn Thr Ser
130 135 140

Asp Asp Lys Val Ala Thr Ile Thr Ser Gly Asn Lys Ser Thr Asn Val
145 150 155 160

Thr Val His Lys Ser Glu Ala Gly Thr Ser Ser Val Phe Tyr Tyr Lys
165 170 175

Thr Gly Asp Met Leu Pro Glu Asp Thr Thr His Val Arg Trp Phe Leu
180 185 190

Asn Ile Asn Asn Glu Lys Ser Tyr Val Ser Lys Asp Ile Thr Ile Lys
195 200 205

Asp Gln Ile Gln Gly Gly Gln Gln Leu Asp Leu Ser Thr Leu Asn Ile
210 215 220

Asn Val Thr Gly Thr His Ser Asn Tyr Tyr Ser Gly Gln Ser Ala Ile
225 230 235 240

Thr Asp Phe Glu Lys Ala Phe Pro Gly Ser Lys Ile Thr Val Asp Asn
245 250 255

Thr Lys Asn Thr Ile Asp Val Thr Ile Pro Gln Gly Tyr Gly Ser Tyr
260 265 270

Asn Ser Phe Ser Ile Asn Tyr Lys Thr Lys Ile Thr Asn Glu Gln Gln
275 280 285

Lys Glu Phe Val Asn Asn Ser Gln Ala Trp Tyr Gln Glu His Gly Lys
290 295 300

Glu Glu Val Asn Gly Lys Ser Phe Asn His Thr Val His Asn Ile Asn
305 310 315 320

Ala Asn Ala Gly Ile Glu Gly Thr Val Lys Gly Glu Leu Lys Val Leu
325 330 335

Lys Gln Asp Lys Asp Thr Lys Ala Pro Ile Ala Asn Val Lys Phe Lys
340 345 350

Leu Ser Lys Lys Asp Gly Ser Val Val Lys Asp Asn Gln Lys Glu Ile
355 360 365

Glu Ile Ile Thr Asp Ala Asn Gly Ile Ala Asn Ile Lys Ala Leu Pro
370 375 380

Ser Gly Asp Tyr Ile Leu Lys Glu Ile Glu Ala Pro Arg Pro Tyr Thr
385 390 395 400

Phe Asp Lys Asp Lys Glu Tyr Pro Phe Thr Met Lys Asp Thr Asp Asn
405 410 415

Gln Gly Tyr Phe Thr Thr Ile Glu Asn Ala Lys Ala Ile Glu Lys Thr
420 425 430

Lys Asp Val Ser Ala Gln Lys Val Trp Glu Gly Thr Gln Lys Val Lys
435 440 445

Pro Thr Ile Tyr Phe Lys Leu Tyr Lys Gln Asp Asp Asn Gln Asn Thr
450 455 460

Thr Pro Val Asp Lys Ala Glu Ile Lys Lys Leu Glu Asp Gly Thr Thr
465 470 475 480

Lys Val Thr Trp Ser Asn Leu Pro Glu Asn Asp Lys Asn Gly Lys Ala
485 490 495

Ile Lys Tyr Leu Val Lys Glu Val Asn Ala Gln Gly Glu Asp Thr Thr
500 505 510

Pro Glu Gly Tyr Thr Lys Lys Glu Asn Gly Leu Val Val Thr Asn Thr
515 520 525

Glu Lys Pro Ile Glu Thr Thr Ser Ile Ser Gly Glu Lys Val Trp Asp
530 535 540

Asp Lys Asp Asn Gln Asp Gly Lys Arg Pro Glu Lys Val Ser Val Asn
545 550 555 560

Leu Leu Ala Asn Gly Glu Lys Val Lys Thr Leu Asp Val Thr Ser Glu
565 570 575

Thr Asn Trp Lys Tyr Glu Phe Lys Asp Leu Pro Lys Tyr Asp Glu Gly
580 585 590

Lys Lys Ile Glu Tyr Thr Val Thr Glu Asp His Val Lys Asp Tyr Thr
595 600 605

Thr Asp Ile Asn Gly Thr Thr Ile Thr Asn Lys Tyr Thr Pro Gly Glu
610 615 620

Thr Ser Ala Thr Val Thr Lys Asn Trp Asp Asp Asn Asn Asn Gln Asp
625 630 635 640

Gly Lys Arg Pro Thr Glu Ile Lys Val Glu Leu Tyr Gln Asp Gly Lys
645 650 655

Ala Thr Gly Lys Thr Ala Ile Leu Asn Glu Ser Asn Asn Trp Thr His
660 665 670

Thr Trp Thr Gly Leu Asp Glu Lys Ala Lys Gly Gln Gln Val Lys Tyr
675 680 685

Thr Val Glu Glu Leu Thr Lys Val Lys Gly Tyr Thr Thr His Val Asp
690 695 700

Asn Asn Asp Met Gly Asn Leu Ile Val Thr Asn Lys Tyr Thr Pro Glu
705 710 715 720

Thr Thr Ser Ile Ser Gly Glu Lys Val Trp Asp Asp Lys Asp Asn Gln
725 730 735

Asp Gly Lys Arg Pro Glu Lys Val Ser Val Asn Leu Leu Ala Asp Gly
740 745 750

Glu Lys Val Lys Thr Leu Asp Val Thr Ser Glu Thr Asn Trp Lys Tyr
755 760 765

Glu Phe Lys Asp Leu Pro Lys Tyr Asp Glu Gly Lys Lys Ile Glu Tyr
770 775 780

Thr Val Thr Glu Asp His Val Lys Asp Tyr Thr Thr Asp Ile Asn Gly
785 790 795 800

Thr Thr Ile Thr Asn Lys Tyr Thr Pro Gly Glu Thr Ser Ala Thr Val
805 810 815

Thr Lys Asn Trp Asp Asp Asn Asn Gln Asp Gly Lys Arg Pro Thr
820 825 830

Glu Ile Lys Val Glu Leu Tyr Gln Asp Gly Lys Ala Thr Gly Lys Thr
835 840 845

Ala Ile Leu Asn Glu Ser Asn Asn Trp Thr His Thr Trp Thr Gly Leu
850 855 860

Asp Glu Lys Ala Lys Gly Gln Gln Val Lys Tyr Thr Val Glu Glu Leu
865 870 875 880

Thr Lys Val Lys Gly Tyr Thr Thr His Val Asp Asn Asn Asp Met Gly
885 890 895

Asn Leu Ile Val Thr Asn Lys Tyr Thr Pro Glu Thr Thr Ser Ile Ser
900 905 910

Gly Glu Lys Val Trp Asp Asp Lys Asp Asn Gln Asp Gly Lys Arg Pro
915 920 925

Glu Lys Val Ser Val Asn Leu Leu Ala Asn Gly Glu Lys Val Lys Thr
930 935 940

Leu Asp Val Thr Ser Glu Thr Asn Trp Lys Tyr Glu Phe Lys Asp Leu
945 950 955 960

Pro Lys Tyr Asp Glu Gly Lys Lys Ile Glu Tyr Thr Val Thr Glu Asp
965 970 975

His Val Lys Asp Tyr Thr Asp Ile Asn Gly Thr Thr Ile Thr Asn
980 985 990

Lys Tyr Thr Pro Gly Glu Thr Ser Ala Thr Val Thr Lys Asn Trp Asp
995 1000 1005

Asp Asn Asn Asn Gln Asp Gly Lys Arg Pro Thr Glu Ile Lys Val
1010 1015 1020

Glu Leu Tyr Gln Asp Gly Lys Ala Thr Gly Lys Thr Ala Ile Leu
1025 1030 1035

Asn Glu Ser Asn Asn Trp Thr His Thr Trp Thr Gly Leu Asp Glu
1040 1045 1050

Lys Ala Lys Gly Gln Gln Val Lys Tyr Thr Val Asp Glu Leu Thr
1055 1060 1065

Lys Val Asn Gly Tyr Thr His Val Asp Asn Asn Asp Met Gly
1070 1075 1080

Asn Leu Ile Val Thr Asn Lys Tyr Thr Pro Lys Lys Pro Asn Lys
1085 1090 1095

Pro Ile Tyr Pro Glu Lys Pro Lys Asp Lys Thr Pro Pro Thr Lys
1100 1105 1110

Pro Asp His Ser Asn Lys Val Lys Pro Thr Pro Pro Asp Lys Pro
1115 1120 1125

Ser Lys Val Asp Lys Asp Asp Gln Pro Lys Asp Asn Lys Thr Lys
1130 1135 1140

Pro Glu Asn Pro Leu Lys Glu Leu Pro Lys Thr Gly Met Lys Ile
1145 1150 1155

Ile Thr Ser Trp Ile Thr Trp Val Phe Ile Gly Ile Leu Gly Leu
1160 1165 1170

Tyr Leu Ile Leu Arg Lys Arg Phe Asn Ser
1175 1180

<210> 46 <211> 9 <212> PRT <213> Homo sapiens <220> <221>
MISC_FEATURE <222> (4)..(4) <223> Xaa can be any amino acid

<220> <221> MISC_FEATURE <222> (6)..(7) <223> Xaa can be any amino acid

<400> 46

Ile Leu Val Xaa Tyr Xaa Xaa Leu Val
1 5

<210> 49 <211> 237 <212> PRT <213> Homo sapiens <400> 49

Met Thr Ser Glu Ile Thr Tyr Ala Glu Val Arg Phe Lys Asn Glu Phe
1 5 10 15

Lys Ser Ser Gly Ile Asn Thr Ala Ser Ser Ala Ala Ser Lys Glu Arg
20 25 30

Thr Ala Pro His Lys Ser Asn Thr Gly Phe Pro Lys Leu Leu Cys Ala
35 40 45

Ser Leu Leu Ile Phe Phe Leu Leu Leu Ala Ile Ser Phe Phe Ile Ala
50 55 60

Phe Val Ile Phe Phe Gln Lys Tyr Ser Gln Leu Leu Glu Lys Lys Thr
65 70 75 80

Thr Lys Glu Leu Val His Thr Thr Leu Glu Cys Val Lys Lys Asn Met
85 90 95

Pro Val Glu Glu Thr Ala Trp Ser Cys Cys Pro Lys Asn Trp Lys Ser
100 105 110

Phe Ser Ser Asn Cys Tyr Phe Ile Ser Thr Glu Ser Ala Ser Trp Gln

115 120 125

Asp Ser Glu Lys Asp Cys Ala Arg Met Glu Ala His Leu Leu Val Ile
130 135 140

Asn Thr Gln Glu Glu Gln Asp Phe Ile Phe Gln Asn Leu Gln Glu Glu
145 150 155 160

Ser Ala Tyr Phe Val Gly Leu Ser Asp Pro Glu Gly Gln Arg His Trp
165 170 175

Gln Trp Val Asp Gln Thr Pro Tyr Asn Glu Ser Ser Thr Phe Trp His
180 185 190

Pro Arg Glu Pro Ser Asp Pro Asn Glu Arg Cys Val Val Leu Asn Phe
195 200 205

Arg Lys Ser Pro Lys Arg Trp Gly Trp Asn Asp Val Asn Cys Leu Gly
210 215 220

Pro Gln Arg Ser Val Cys Glu Met Met Lys Ile His Leu
225 230 235

<210> 53 <211> 32 <212> PRT <213> Homo sapiens <220> <221>
MISC_FEATURE <222> (2)..(2) <223> Xaa is Ile or Leu

<220> <221> MISC_FEATURE <222> (3)..(3) <223> Xaa can be any amino acid

<220> <221> MISC_FEATURE <222> (6)..(6) <223> Xaa can be any amino acid

<220> <221> MISC_FEATURE <222> (8)..(25) <223> Xaa can be any amino acid

<220> <221> MISC_FEATURE <222> (26)..(26) <223> Xaa is Thr or Asn

<220> <221> MISC_FEATURE <222> (31)..(31) <223> Xaa is Ile or Val

<220> <221> MISC_FEATURE <222> (32)..(32) <223> Xaa is Lys or Arg

<400> 53

Glu Xaa Xaa Tyr Ala Xaa Leu Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu Tyr Ser Glu Xaa Xaa
20 25 30

<210> 54 <211> 6 <212> PRT <213> Homo sapiens <220> <221>

MISC_FEATURE <222> (1)..(1) <223> Xaa is Thr or Asn
<220> <221> MISC_FEATURE <222> (6)..(6) <223> Xaa is Ile or Val
<400> 54

Xaa Glu Tyr Ser Glu Xaa
1 5

<210> 56 <211> 626 <212> PRT <213> Homo sapiens <400> 56
Met Ile Phe Leu Thr Ala Leu Pro Leu Phe Trp Ile Met Ile Ser Ala
1 5 10 15

Ser Arg Gly Gly His Trp Gly Ala Trp Met Pro Ser Ser Ile Ser Ala
20 25 30

Phe Glu Gly Thr Cys Val Ser Ile Pro Cys Arg Phe Asp Phe Pro Asp
35 40 45

Glu Leu Arg Pro Ala Val Val His Gly Val Trp Tyr Phe Asn Ser Pro
50 55 60

Tyr Pro Lys Asn Tyr Pro Pro Val Val Phe Lys Ser Arg Thr Gln Val
65 70 75 80

Val His Glu Ser Phe Gln Gly Arg Ser Arg Leu Leu Gly Asp Leu Gly
85 90 95

Leu Arg Asn Cys Thr Leu Leu Leu Ser Asn Val Ser Pro Glu Leu Gly
100 105 110

Gly Lys Tyr Tyr Phe Arg Gly Asp Leu Gly Gly Tyr Asn Gln Tyr Thr
115 120 125

Phe Ser Glu His Ser Val Leu Asp Ile Val Asn Thr Pro Asn Ile Val
130 135 140

Val Pro Pro Glu Val Val Ala Gly Thr Glu Val Glu Val Ser Cys Met
145 150 155 160

Val Pro Asp Asn Cys Pro Glu Leu Arg Pro Glu Leu Ser Trp Leu Gly
165 170 175

His Glu Gly Leu Gly Glu Pro Ala Val Leu Gly Arg Leu Arg Glu Asp
180 185 190

Glu Gly Thr Trp Val Gln Val Ser Leu Leu His Phe Val Pro Thr Arg
195 200 205

Glu Ala Asn Gly His Arg Leu Gly Cys Gln Ala Ser Phe Pro Asn Thr
210 215 220

Thr Leu Gln Phe Glu Gly Tyr Ala Ser Met Asp Val Lys Tyr Pro Pro
225 230 235 240

Val Ile Val Glu Met Asn Ser Ser Val Glu Ala Ile Glu Gly Ser His
245 250 255

Val Ser Leu Leu Cys Gly Ala Asp Ser Asn Pro Pro Pro Leu Leu Thr
260 265 270

Trp Met Arg Asp Gly Thr Val Leu Arg Glu Ala Val Ala Glu Ser Leu
275 280 285

Leu Leu Glu Leu Glu Val Thr Pro Ala Glu Asp Gly Val Tyr Ala
290 295 300

Cys Leu Ala Glu Asn Ala Tyr Gly Gln Asp Asn Arg Thr Val Gly Leu
305 310 315 320

Ser Val Met Tyr Ala Pro Trp Lys Pro Thr Val Asn Gly Thr Met Val
325 330 335

Ala Val Glu Gly Glu Thr Val Ser Ile Leu Cys Ser Thr Gln Ser Asn
340 345 350

Pro Asp Pro Ile Leu Thr Ile Phe Lys Glu Lys Gln Ile Leu Ser Thr
355 360 365

Val Ile Tyr Glu Ser Glu Leu Gln Leu Glu Leu Pro Ala Val Ser Pro
370 375 380

Glu Asp Asp Gly Glu Tyr Trp Cys Val Ala Glu Asn Gln Tyr Gly Gln
385 390 395 400

Arg Ala Thr Ala Phe Asn Leu Ser Val Glu Phe Ala Pro Val Leu Leu
405 410 415

Leu Glu Ser His Cys Ala Ala Ala Arg Asp Thr Val Gln Cys Leu Cys
420 425 430

Val Val Lys Ser Asn Pro Glu Pro Ser Val Ala Phe Glu Leu Pro Ser
435 440 445

Arg Asn Val Thr Val Asn Glu Ser Glu Arg Glu Phe Val Tyr Ser Glu
450 455 460

Arg Ser Gly Leu Val Leu Thr Ser Ile Leu Thr Leu Arg Gly Gln Ala
465 470 475 480

Gln Ala Pro Pro Arg Val Ile Cys Thr Ala Arg Asn Leu Tyr Gly Ala
485 490 495

Lys Ser Leu Glu Leu Pro Phe Gln Gly Ala His Arg Leu Met Trp Ala
500 505 510

Lys Ile Gly Pro Val Gly Ala Val Val Ala Phe Ala Ile Leu Ile Ala
515 520 525

Ile Val Cys Tyr Ile Thr Gln Thr Arg Arg Lys Lys Asn Val Thr Glu
530 535 540

Ser Pro Ser Phe Ser Ala Gly Asp Asn Pro Pro Val Leu Phe Ser Ser
545 550 555 560

Asp Phe Arg Ile Ser Gly Ala Pro Glu Lys Tyr Glu Ser Glu Arg Arg
565 570 575

Leu Gly Ser Glu Arg Arg Leu Leu Gly Leu Arg Gly Glu Pro Pro Glu
580 585 590

Leu Asp Leu Ser Tyr Ser His Ser Asp Leu Gly Lys Arg Pro Thr Lys
595 600 605

Asp Ser Tyr Thr Leu Thr Glu Glu Leu Ala Glu Tyr Ala Glu Ile Arg
610 615 620

Val Lys
625

<210> 63 <211> 209 <212> PRT <213> Homo sapiens <400> 63
Met Ala Leu Leu Ala Glu His Leu Leu Lys Pro Leu Pro Ala Asp Lys
1 5 10 15

Gln Ile Glu Thr Gly Pro Phe Leu Glu Ala Val Ser His Leu Pro Pro
20 25 30

Phe Phe Asp Cys Leu Gly Ser Pro Val Phe Thr Pro Ile Lys Ala Asp
35 40 45

Ile Ser Gly Asn Ile Thr Lys Ile Lys Ala Val Tyr Asp Thr Asn Pro
50 55 60

Ala Lys Phe Arg Thr Leu Gln Asn Ile Leu Glu Val Glu Lys Glu Met
65 70 75 80

Tyr Gly Ala Glu Trp Pro Lys Val Gly Ala Thr Leu Ala Leu Met Trp
85 90 95

Leu Lys Arg Gly Leu Arg Phe Ile Gln Val Phe Leu Gln Ser Ile Cys
100 105 110

Asp Gly Glu Arg Asp Glu Asn His Pro Asn Leu Ile Arg Val Asn Ala
115 120 125

Thr Lys Ala Tyr Glu Met Ala Leu Lys Lys Tyr His Gly Trp Ile Val
130 135 140

Gln Lys Ile Phe Gln Ala Ala Leu Tyr Ala Ala Pro Tyr Lys Ser Asp
145 150 155 160

Phe Leu Lys Ala Leu Ser Lys Gly Gln Asn Val Thr Glu Glu Glu Cys
165 170 175

Leu Glu Lys Ile Arg Leu Phe Leu Val Asn Tyr Thr Ala Thr Ile Asp
180 185 190

Val Ile Tyr Glu Met Tyr Thr Gln Met Asn Ala Glu Leu Asn Tyr Lys
195 200 205

Val

<210> 64 <211> 276 <212> PRT <213> Homo sapiens <400> 64

Met Gly Asn Ser Met Lys Ser Thr Pro Ala Pro Ala Glu Arg Pro Leu
1 5 10 15

Pro Asn Pro Glu Gly Leu Asp Ser Asp Phe Leu Ala Val Leu Ser Asp
20 25 30

Tyr Pro Ser Pro Asp Ile Ser Pro Pro Ile Phe Arg Arg Gly Glu Lys
35 40 45

Leu Arg Val Ile Ser Asp Glu Gly Gly Trp Trp Lys Ala Ile Ser Leu
50 55 60

Ser Thr Gly Arg Glu Ser Tyr Ile Pro Gly Ile Cys Val Ala Arg Val
65 70 75 80

Tyr His Gly Trp Leu Phe Glu Gly Leu Gly Arg Asp Lys Ala Glu Glu
85 90 95

Leu Leu Gln Leu Pro Asp Thr Lys Val Gly Ser Phe Met Ile Arg Glu
100 105 110

Ser Glu Thr Lys Lys Gly Phe Tyr Ser Leu Ser Val Arg His Arg Gln
115 120 125

Val Lys His Tyr Arg Ile Phe Arg Leu Pro Asn Asn Trp Tyr Tyr Ile
130 135 140

Ser Pro Arg Leu Thr Phe Gln Cys Leu Glu Asp Leu Val Asn His Tyr
145 150 155 160

Ser Glu Val Ala Asp Gly Leu Cys Cys Val Leu Thr Thr Pro Cys Leu
165 170 175

Thr Gln Ser Thr Ala Ala Pro Ala Val Arg Ala Ser Ser Ser Pro Val
180 185 190

Thr Leu Arg Gln Lys Thr Val Asp Trp Arg Arg Val Ser Arg Leu Gln
195 200 205

Glu Asp Pro Glu Gly Thr Glu Asn Pro Leu Gly Val Asp Glu Ser Leu
210 215 220

Phe Ser Tyr Gly Leu Arg Glu Ser Ile Ala Ser Tyr Leu Ser Leu Thr
225 230 235 240

Ser Glu Asp Asn Thr Ser Phe Asp Arg Lys Lys Lys Ser Ile Ser Leu
245 250 255

Met Tyr Gly Gly Ser Lys Arg Lys Ser Ser Phe Phe Ser Ser Pro Pro
260 265 270

Tyr Phe Glu Asp
275

<210> 65 <211> 18 <212> PRT <213> Homo sapiens <400> 65

Lys Arg Phe Lys Gln Asp Gly Gly Trp Ser His Trp Ser Pro Trp Ser
1 5 10 15

Ser Cys

<210> 66 <211> 18 <212> PRT <213> Homo sapiens <400> 66

Lys Arg Ala Lys Ala Ala Gly Gly Trp Ser His Trp Ser Pro Trp Ser
1 5 10 15

Ser Cys

<210> 67 <211> 1784 <212> DNA <213> Staphylococcus aureus <220>
<221> CDS <222> (184)..(1635) <223>

<400> 67
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aatattttatt ttataagttg taaaacttac ctttaaattt aattataaat atagattttt 120
gtattgcáat acataattcg ttatattatg atgactatac aaatacatac agggggattt 180
aat ttg aaa aag aaa aac att tat tca att cgt aaa cta ggt gta ggt 228
Leu Lys Lys Lys Asn Ile Tyr Ser Ile Arg Lys Leu Gly Val Gly
1 5 10 15
att gca tct gta act tta ggt aca tta ctt ata tct ggt ggc gta aca 276
Ile Ala Ser Val Thr Leu Gly Thr Leu Leu Ile Ser Gly Gly Val Thr
20 25 30
cct gct gca aat gct gcg caa cac gat gaa gct caa caa aat gct ttt 324
Pro Ala Ala Asn Ala Ala Gln His Asp Glu Ala Gln Gln Asn Ala Phe
35 40 45
tat caa gtc tta aat atg cct aac tta aat gct gat caa cgc aat ggt 372
Tyr Gln Val Leu Asn Met Pro Asn Leu Asn Ala Asp Gln Arg Asn Gly
50 55 60
ttt atc caa agc ctt aaa gat gat cca agc caa agt gct aac gtt tta 420
Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Val Leu

65	70	75	
ggt gaa gct caa aaa ctt aat gac tct caa gct cca aaa gct gat gcg Gly Glu Ala Gln Lys Leu Asn Asp Ser Gln Ala Pro Lys Ala Asp Ala	80	85	468
90		95	
caa caa aat aac ttc gac aaa gat caa caa agc gcc ttc tat gaa atc Gln Gln Asn Asn Phe Asp Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile	100	105	516
		110	
ttg aac atg cct aac tta aac gaa gcg caa cgt aac ggc ttc att caa Leu Asn Met Pro Asn Leu Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln	115	120	564
		125	
agt ctt aaa gac gac cca agc caa agc act aac gtt tta ggt gaa gct Ser Leu Lys Asp Asp Pro Ser Gln Ser Thr Asn Val Leu Gly Glu Ala	130	135	612
		140	
aaa aaa tta aac gaa tct caa gca ccg aaa gct gat aac aat ttc aac Lys Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn	145	150	660
		155	
aaa gaa caa caa aat gct ttc tat gaa atc ttg aat atg cct aac tta Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu	160	165	708
		170	
175			
aac gaa gaa caa cgc aat ggt ttc atc caa agc tta aaa gat gac cca Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro	180	185	756
		190	
agc caa agt gct aac cta ttg tca gaa gct aaa aag tta aat gaa tct Ser Gln Ser Ala Asn Leu Leu Ser Glu Ala Lys Lys Leu Asn Glu Ser	195	200	804
		205	
caa gca ccg aaa gcg gat aac aaa ttc aac aaa gaa caa caa aat gct Gln Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala	210	215	852
		220	
tcc tat gaa atc tta cat tta cct aac tta aac gaa gaa caa cgc aat Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn	225	230	900
		235	
ggt ttc atc caa agc cta aaa gat gac cca agc caa agc gct aac ctt Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu	240	245	948
		250	
255			
tta gca gaa gct aaa aag cta aat gat gct caa gca cca aaa gct gac Leu Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Ala Asp	260	265	996
		270	
aac aaa ttc aac aaa gaa caa caa aat gct ttc tat gaa att tta cat Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His	275	280	1044
		285	
tta cct aac tta act gaa gaa caa cgt aac ggc ttc atc caa agc ctt Leu Pro Asn Leu Thr Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu	290	295	1092
		300	
aaa gac gat cct tcg gtg agc aaa gaa att tta gca gaa gct aaa aag Lys Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Ala Glu Ala Lys Lys			1140

305	310	315	
cta aac gat gct caa gca cca aaa gag gaa gac aat aac aag cct ggc Leu Asn Asp Ala Gln Ala Pro Lys Glu Glu Asp Asn Asn Lys Pro Gly 320 325 330 335			1188
aaa gaa gac aat aac aag cct ggc aaa gaa gac aat aac aag cct ggc Lys Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly 340 345 350			1236
aaa gaa gac aac aac aag cct ggc aaa gaa gac aac aac aag cct ggt Lys Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly 355 360 365			1284
aaa gaa gac aac aac aag cct ggc aaa gaa gac ggc aac aag cct ggt Lys Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly 370 375 380			1332
aaa gaa gac aac aaa aaa cct ggt aaa gaa gat ggc aac aag cct ggt Lys Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly 385 390 395			1380
aaa gaa gac aac aaa aaa cct ggt aaa gaa gac ggc aac aag cct ggc Lys Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly 400 405 410 415			1428
aaa gaa gat ggc aac aaa cct ggt aaa gaa gat ggt aac gga gta cat Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Gly Val His 420 425 430			1476
gtc gtt aaa ctt ggt gat aca gta aat gac att gca aaa gca aac ggc Val Val Lys Leu Gly Asp Thr Val Asn Asp Ile Ala Lys Ala Asn Gly 435 440 445			1524
act act gct gac aaa att gct gca gat aac aaa ttg gct gat aaa aac Thr Thr Ala Asp Lys Ile Ala Asp Asn Lys Leu Ala Asp Lys Asn 450 455 460			1572
atg atc aaa ctt ggt caa gaa ctt gtt gtt gat aag aag caa cca caa Met Ile Lys Leu Gly Gln Glu Leu Val Val Asp Lys Lys Gln Pro Gln 465 470 475			1620
acc atg cag agc taa caaagctcaa gcattatcg aaactggcga agaaaatcca Thr Met Gln Ser 480			1675
ttcatcggtt caactgtatt tggtggtt tcattagct tagtgtcagc gttatttagct			1735
ggacgtcgtc gcgaaactata aaaacaaaca atacacaacg atagatatc			1784
 <210> 68 <211> 483 <212> PRT <213> Staphylococcus aureus <400> 68			
Leu Lys Lys Lys Asn Ile Tyr Ser Ile Arg Lys Leu Gly Val Gly Ile 1 5 10 15			
 Ala Ser Val Thr Leu Gly Thr Leu Leu Ile Ser Gly Gly Val Thr Pro 20 25 30			

Ala Ala Asn Ala Ala Gln His Asp Glu Ala Gln Gln Asn Ala Phe Tyr
35 40 45

Gln Val Leu Asn Met Pro Asn Leu Asn Ala Asp Gln Arg Asn Gly Phe
50 55 60

Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Val Leu Gly
65 70 75 80

Glu Ala Gln Lys Leu Asn Asp Ser Gln Ala Pro Lys Ala Asp Ala Gln
85 90 95

Gln Asn Asn Phe Asp Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu
100 105 110

Asn Met Pro Asn Leu Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln Ser
115 120 125

Leu Lys Asp Asp Pro Ser Gln Ser Thr Asn Val Leu Gly Glu Ala Lys
130 135 140

Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn Lys
145 150 155 160

Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn
165 170 175

Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser
180 185 190

Gln Ser Ala Asn Leu Leu Ser Glu Ala Lys Lys Leu Asn Glu Ser Gln
195 200 205

Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe
210 215 220

Tyr Glu Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly
225 230 235 240

Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu
245 250 255

Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Ala Asp Asn
260 265 270

Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His Leu
275 280 285

Pro Asn Leu Thr Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys
290 295 300

Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Ala Glu Ala Lys Lys Leu
305 310 315 320

Asn Asp Ala Gln Ala Pro Lys Glu Glu Asp Asn Asn Lys Pro Gly Lys
325 330 335

Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly Lys
340 345 350

Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Asn Asn Lys Pro Gly Lys
355 360 365

Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
370 375 380

Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
385 390 395 400

Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
405 410 415

Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Gly Val His Val
420 425 430

Val Lys Leu Gly Asp Thr Val Asn Asp Ile Ala Lys Ala Asn Gly Thr
435 440 445

Thr Ala Asp Lys Ile Ala Ala Asp Asn Lys Leu Ala Asp Lys Asn Met
450 455 460

Ile Lys Leu Gly Gln Glu Leu Val Val Asp Lys Lys Gln Pro Gln Thr
465 470 475 480

Met Gln Ser

<210> 69 <211> 279 <212> DNA <213> Homo sapiens <220> <221> CDS
<222> (1)..(279) <223>

<400> 69
 gtg aag ccc aag gcc tgg ctg tcc cgt ggc ccc agt cct ggc cct ggc 48
 Val Lys Pro Lys Ala Trp Leu Ser Arg Gly Pro Ser Pro Gly Pro Gly
 1 5 10 15

cgt ctg ctg ctg gtg tgc cat gtc tca gga ttc tac cca aag cct gta 96
 Arg Leu Leu Leu Val Cys His Val Ser Gly Phe Tyr Pro Lys Pro Val
 20 25 30

tgg gtg aag tgg atg cgg ggt gag cag gag cag cag ggc act cag cca 144
 Trp Val Lys Trp Met Arg Gly Glu Gln Glu Gln Gly Thr Gln Pro
 35 40 45

ggg gac atc ctg ccc aat gct gac gag aca tgg tat ctc cga qca acc 192
 Gly Asp Ile Leu Pro Asn Ala Asp Glu Thr Trp Tyr Leu Arg Ala Thr
 50 55 60

ctg gat gtg gtg gct ggg gag gca gct ggc ctg tcc tgt cgg gtg aag 240
 Leu Asp Val Val Ala Gly Glu Ala Ala Gly Leu Ser Cys Arg Val Lys
 65 70 75 80

cac agc agt cta gag ggc cag gac atc gtc ctc tac tgg 279
 His Ser Ser Leu Glu Gly Gln Asp Ile Val Leu Tyr Trp
 85 90

<210> 70 <211> 93 <212> PRT <213> Homo sapiens <400> 70
 Val Lys Pro Lys Ala Trp Leu Ser Arg Gly Pro Ser Pro Gly Pro Gly
 1 5 10 15

Arg Leu Leu Leu Val Cys His Val Ser Gly Phe Tyr Pro Lys Pro Val
 20 25 30

Trp Val Lys Trp Met Arg Gly Glu Gln Glu Gln Gly Thr Gln Pro
 35 40 45

Gly Asp Ile Leu Pro Asn Ala Asp Glu Thr Trp Tyr Leu Arg Ala Thr
 50 55 60

Leu Asp Val Val Ala Gly Glu Ala Ala Gly Leu Ser Cys Arg Val Lys
 65 70 75 80

His Ser Ser Leu Glu Gly Gln Asp Ile Val Leu Tyr Trp
 85 90

<210> 71 <211> 1873 <212> DNA <213> Mus musculus <220> <221> CDS
 <222> (173)..(175) <223>
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 <220> <221> CDS <222> (315)..(1367) <223>
 <400> 71

aggaaggggac agggtgacac cccaggatta cataaattta caggggctgc cgaattggc	60
gaacaagccc gtggAACCTG gaagccAGAG AACACCATCG CTGAAAGGA AAGAAACTGA	120
agctttctc ggAGCCTATC TGGGCTGCTC AAACTTCAg AATCTACCgA CC ATG Met 1	175
gtgagtcaga cagactgtct tgggtggaa ctggagccaa cctgagGAAT CTCAGGGTCC	235
tggcaggagt ctccctgtcc ccctacttcc tcctcaG gag cgt GTG CTT GGC TTG Glu Arg Val Leu Gly Leu 5	290
ttg ctg ttg ctt ctg gtG cac gcc tct ccc gcc cca cca gag ccc tgc Leu Leu Leu Leu Leu Val His Ala Ser Pro Ala Pro Pro Glu Pro Cys 10 15 20	338
gag cta gac gag gaa agt tgc tcc tgc aac ttc tca gat ccg aag cca Glu Leu Asp Glu Glu Ser Cys Ser Cys Asn Phe Ser Asp Pro Lys Pro 25 30 35	386
gat tgg tcc agc gct ttc aat tgc ttt ggg ggc gca gat gtG gaa ttG Asp Trp Ser Ser Ala Phe Asn Cys Leu Gly Ala Ala Asp Val Glu Leu 40 45 50 55	434
tac ggc ggc ggc cgc agc ctG gaa tac ctt cta aag cgt gtG gac acG Tyr Gly Gly Arg Ser Leu Glu Tyr Leu Leu Lys Arg Val Asp Thr 60 65 70	482
gaa gca gat ctG ggg cag ttc act gat att atc aag tct ctG tcc tta Glu Ala Asp Leu Gly Gln Phe Thr Asp Ile Ile Lys Ser Leu Ser Leu 75 80 85	530
aag cgg ctt acg gtG cgG gcc gcg cgg att cct agt cgg att cta ttG Lys Arg Leu Thr Val Arg Ala Ala Arg Ile Pro Ser Arg Ile Leu Phe 90 95 100	578
gga gcc ctG cgt gtG ctc ggg att tcc ggc ctc cag gaa ctG act ctt Gly Ala Leu Arg Val Leu Gly Ile Ser Gly Leu Gln Glu Leu Thr Leu 105 110 115	626
gaa aat ctc gag gta acc ggc acc gcg ccc ctt ctG gaa gcc Glu Asn Leu Glu Val Thr Gly Thr Ala Pro Pro Leu Leu Glu Ala 120 125 130 135	674
acc gga ccc gat ctc aac atc ttG aac ctc cgc aac gtG tcG tgg gca Thr Gly Pro Asp Leu Asn Ile Leu Asn Leu Arg Asn Val Ser Trp Ala 140 145 150	722
aca agg gat gcc tgg ctc gca gaa ctG cag cag tgg cta aag cct gga Thr Arg Asp Ala Trp Leu Ala Glu Leu Gln Gln Trp Leu Lys Pro Gly 155 160 165	770
ctc aag gta ctG agt att gcc caa gca cac tca ctc aac ttt tcc tgc Leu Lys Val Leu Ser Ile Ala Gln Ala His Ser Leu Asn Phe Ser Cys 170 175 180	818
gaa cag gtc cgc gtc ttc cct gcc ctc tcc acc tta gac ctG tct gac Glu Gln Val Arg Val Phe Pro Ala Leu Ser Thr Leu Asp Leu Ser Asp	866

185	190	195	
aat cct gaa ttg ggc gag aga gga ctg atc tca gcc ctc tgt ccc ctc Asn Pro Glu Leu Gly Glu Arg Gly Leu Ile Ser Ala Leu Cys Pro Leu 200 205 210 215			914
aag ttc ccg acc ctc caa gtt tta gcg ctg cgt aac gcg ggg atg gag Lys Phe Pro Thr Leu Gln Val Leu Ala Leu Arg Asn Ala Gly Met Glu 220 225 230			962
acg ccc agc ggc gtg tgc tct gcg ctg gcc gca gca agg gta cag ctg Thr Pro Ser Gly Val Cys Ser Ala Leu Ala Ala Arg Val Gln Leu 235 240 245			1010
caa gga cta gac ctt agt cac aat tca ctg cgg gat gct gca ggc gct Gln Gly Leu Asp Leu Ser His Asn Ser Leu Arg Asp Ala Ala Gly Ala 250 255 260			1058
ccg agt tgt gac tgg ccc agt cag cta aac tcg ctc aat ctg tct ttc Pro Ser Cys Asp Trp Pro Ser Gln Leu Asn Ser Leu Asn Leu Ser Phe 265 270 275			1106
act ggg ctg aag cag gta cct aaa ggg ctg cca gcc aag ctc agc gtg Thr Gly Leu Lys Gln Val Pro Lys Gly Leu Pro Ala Lys Leu Ser Val 280 285 290 295			1154
ctg gat ctc agt tac aac agg ctg gat agg aac cct agc cca gat gag Leu Asp Leu Ser Tyr Asn Arg Leu Asp Arg Asn Pro Ser Pro Asp Glu 300 305 310			1202
ctg ccc caa gtg ggg aac ctg tca ctt aaa gga aat ccc ttt ttg gac Leu Pro Gln Val Gly Asn Leu Ser Leu Lys Gly Asn Pro Phe Leu Asp 315 320 325			1250
tct gaa tcc cac tcg gag aag ttt aac tct ggc gta gtc acc gcc gga Ser Glu Ser His Ser Glu Lys Phe Asn Ser Gly Val Val Thr Ala Gly 330 335 340			1298
gct cca tca tcc caa gca gtg gcc ttg tca gga act ctg gct ttg ctc Ala Pro Ser Ser Gln Ala Val Ala Leu Ser Gly Thr Leu Ala Leu Leu 345 350 355			1346
cta gga gat cgc ctc ttt gtt taaggaacat ttgcattcctc ctggttctg Leu Gly Asp Arg Leu Phe Val 360 365			1397
agggtcctcg tcaacgaatc ctctqcttta aatttattaa aatcttaatc cacgatgtaa			1457
ggaaagaaaag gcagtcaaga tggttcagtg ggtaaaagcc agcaaacttg acccctgatt			1517
ttaaccctca ggatccacac ggaaggggaa aactcactcc tgaaagttgt ccatctgtgc			1577
tcacaaaataa atatttttta aaataacaat gtgtttgtt gttttgttt tgtttgggtt			1637
ttgttgtgtt ttgtttgtt ttgagacag tctggctatg tattccttggc			1697
tggcctcaaa ctcataaaga tcaagatcg cctgcctcta cctccaaatg ctctggtaa			1757
aggatgtgc ctccatgccc agttgaagtc atcctgaacc acgagtccag gccactcact			1817

ctttactaag atctttacta agtatctgcc ataggtcagg ctcagtgcta aatgag 1873

<210> 72 <211> 366 <212> PRT <213> Mus musculus <400> 72

Met Glu Arg Val Leu Gly Leu Leu Leu Leu Leu Leu Val His Ala Ser
1 5 10 15

Pro Ala Pro Pro Glu Pro Cys Glu Leu Asp Glu Glu Ser Cys Ser Cys
20 25 30

Asn Phe Ser Asp Pro Lys Pro Asp Trp Ser Ser Ala Phe Asn Cys Leu
35 40 45

Gly Ala Ala Asp Val Glu Leu Tyr Gly Gly Gly Arg Ser Leu Glu Tyr
50 55 60

Leu Leu Lys Arg Val Asp Thr Glu Ala Asp Leu Gly Gln Phe Thr Asp
65 70 75 80

Ile Ile Lys Ser Leu Ser Leu Lys Arg Leu Thr Val Arg Ala Ala Arg
85 90 95

Ile Pro Ser Arg Ile Leu Phe Gly Ala Leu Arg Val Leu Gly Ile Ser
100 105 110

Gly Leu Gln Glu Leu Thr Leu Glu Asn Leu Glu Val Thr Gly Thr Ala
115 120 125

Pro Pro Pro Leu Leu Glu Ala Thr Gly Pro Asp Leu Asn Ile Leu Asn
130 135 140

Leu Arg Asn Val Ser Trp Ala Thr Arg Asp Ala Trp Leu Ala Glu Leu
145 150 155 160

Gln Gln Trp Leu Lys Pro Gly Leu Lys Val Leu Ser Ile Ala Gln Ala
165 170 175

His Ser Leu Asn Phe Ser Cys Glu Gln Val Arg Val Phe Pro Ala Leu
180 185 190

Ser Thr Leu Asp Leu Ser Asp Asn Pro Glu Leu Gly Glu Arg Gly Leu
195 200 205

Ile Ser Ala Leu Cys Pro Leu Lys Phe Pro Thr Leu Gln Val Leu Ala
210 215 220

Leu Arg Asn Ala Gly Met Glu Thr Pro Ser Gly Val Cys Ser Ala Leu
225 230 235 240

Ala Ala Ala Arg Val Gln Leu Gln Gly Leu Asp Leu Ser His Asn Ser
245 250 255

Leu Arg Asp Ala Ala Gly Ala Pro Ser Cys Asp Trp Pro Ser Gln Leu
260 265 270

Asn Ser Leu Asn Leu Ser Phe Thr Gly Leu Lys Gln Val Pro Lys Gly
275 280 285

Leu Pro Ala Lys Leu Ser Val Leu Asp Leu Ser Tyr Asn Arg Leu Asp
290 295 300

Arg Asn Pro Ser Pro Asp Glu Leu Pro Gln Val Gly Asn Leu Ser Leu
305 310 315 320

Lys Gly Asn Pro Phe Leu Asp Ser Glu Ser His Ser Glu Lys Phe Asn
325 330 335

Ser Gly Val Val Thr Ala Gly Ala Pro Ser Ser Gln Ala Val Ala Leu
340 345 350

Ser Gly Thr Leu Ala Leu Leu Leu Gly Asp Arg Leu Phe Val
355 360 365

<210> 73 <211> 365 <212> PRT <213> Mus musculus <400> 73

Met Asp Lys Phe Trp Trp His Thr Ala Trp Gly Leu Cys Leu Leu Gln
1 5 10 15

Leu Ser Leu Ala His Pro His Gln Gln Ile Asp Leu Asn Val Thr Cys
20 25 30

Arg Tyr Ala Gly Val Phe His Val Glu Lys Asn Gly Arg Tyr Ser Ile
35 40 45

Ser Arg Thr Glu Ala Ala Asp Leu Cys Gln Ala Phe Asn Ser Thr Leu
50 55 60

Pro Thr Met Asp Gln Met Lys Leu Ala Leu Ser Lys Gly Phe Glu Thr
65 70 75 80

Cys Arg Tyr Gly Phe Ile Glu Gly Asn Val Val Ile Pro Arg Ile His

85 90 95

Pro Asn Ala Ile Cys Ala Ala Asn His Thr Gly Val Tyr Ile Leu Val
100 105 110

Thr Ser Asn Thr Ser His Tyr Asp Thr Tyr Cys Phe Asn Ala Ser Ala
115 120 125

Pro Pro Glu Glu Asp Cys Thr Ser Val Thr Asp Leu Pro Asn Ser Phe
130 135 140

Asp Gly Pro Val Thr Ile Thr Ile Val Asn Arg Asp Gly Thr Arg Tyr
145 150 155 160

Ser Lys Lys Gly Glu Tyr Arg Thr His Gln Glu Asp Ile Asp Ala Ser
165 170 175

Asn Ile Ile Asp Asp Asp Val Ser Ser Gly Ser Thr Ile Glu Lys Ser
180 185 190

Thr Pro Glu Ser Tyr Ile Leu His Thr Tyr Leu Pro Thr Glu Gln Pro
195 200 205

Thr Gly Asp Gln Asp Asp Ser Phe Phe Ile Arg Ser Thr Leu Ala Thr
210 215 220

Arg Asp Arg Asp Ser Ser Lys Asp Ser Arg Gly Ser Ser Arg Thr Val
225 230 235 240

Thr His Gly Ser Glu Leu Ala Gly His Ser Ser Ala Asn Gln Asp Ser
245 250 255

Gly Val Thr Thr Ser Gly Pro Met Arg Arg Pro Gln Ile Pro Glu
260 265 270

Trp Leu Ile Ile Leu Ala Ser Leu Leu Ala Leu Leu Ile Leu Ala
275 280 285

Val Cys Ile Ala Val Asn Ser Arg Arg Arg Cys Gly Gln Lys Lys Lys
290 295 300

Leu Val Ile Asn Gly Gly Asn Gly Thr Val Glu Asp Arg Lys Pro Ser
305 310 315 320

Glu Leu Asn Gly Glu Ala Ser Lys Ser Gln Glu Met Val His Leu Val

325

330

335

Asn Lys Glu Pro Ser Glu Thr Pro Asp Gln Cys Met Thr Ala Asp Glu
340 345 350

Thr Arg Asn Leu Gln Ser Val Asp Met Lys Ile Gly Val
355 360 365

<210> 74 <211> 371 <212> PRT <213> Mus musculus <400> 74

Met Asn Val Lys Gly Lys Val Ile Leu Leu Met Leu Ile Val Ser Thr
1 5 10 15

Val Val Val Val Phe Trp Glu Tyr Val Asn Ser Pro Asp Gly Ser Phe
20 25 30

Leu Trp Ile Tyr His Thr Lys Ile Pro Glu Val Gly Glu Asn Arg Trp
35 40 45

Gln Lys Asp Trp Trp Phe Pro Ser Trp Phe Lys Asn Gly Thr His Ser
50 55 60

Tyr Gln Glu Asp Asn Val Glu Gly Arg Arg Glu Lys Gly Arg Asn Gly
65 70 75 80

Asp Arg Ile Glu Glu Pro Gln Leu Trp Asp Trp Phe Asn Pro Lys Asn
85 90 95

Arg Pro Asp Val Leu Thr Val Thr Pro Trp Lys Ala Pro Ile Val Trp
100 105 110

Glu Gly Thr Tyr Asp Thr Ala Leu Leu Glu Lys Tyr Tyr Ala Thr Gln
115 120 125

Lys Leu Thr Val Gly Leu Thr Val Phe Ala Val Gly Lys Tyr Ile Glu
130 135 140

His Tyr Leu Glu Asp Phe Leu Glu Ser Ala Asp Met Tyr Phe Met Val
145 150 155 160

Gly His Arg Val Ile Phe Tyr Val Met Ile Asp Asp Thr Ser Arg Met
165 170 175

Pro Val Val His Leu Asn Pro Leu His Ser Leu Gln Val Phe Glu Ile
180 185 190

Arg Ser Glu Lys Arg Trp Gln Asp Ile Ser Met Met Arg Met Lys Thr
 195 200 205
 Ile Gly Glu His Ile Leu Ala His Ile Gln His Glu Val Asp Phe Leu
 210 215 220
 Phe Cys Met Asp Val Asp Gln Val Phe Gln Asp Asn Phe Gly Val Glu
 225 230 235 240
 Thr Leu Gly Gln Leu Val Ala Gln Leu Gln Ala Trp Trp Tyr Lys Ala
 245 250 255
 Ser Pro Glu Lys Phe Thr Tyr Glu Arg Arg Glu Leu Ser Ala Ala Tyr
 260 265 270
 Ile Pro Phe Gly Glu Gly Asp Phe Tyr Tyr His Ala Ala Ile Phe Gly
 275 280 285
 Gly Thr Pro Thr His Ile Leu Asn Leu Thr Arg Glu Cys Phe Lys Gly
 290 295 300
 Ile Leu Gln Asp Lys Lys His Asp Ile Glu Ala Gln Trp His Asp Glu
 305 310 315 320
 Ser His Leu Asn Lys Tyr Phe Leu Phe Asn Lys Pro Thr Lys Ile Leu
 325 330 335
 Ser Pro Glu Tyr Cys Trp Asp Tyr Gln Ile Gly Leu Pro Ser Asp Ile
 340 345 350
 Lys Ser Val Lys Val Ala Trp Gln Thr Lys Glu Tyr Asn Leu Val Arg
 355 360 365
 Asn Asn Val
 370

<210> 75 <211> 79 <212> DNA <213> Homo sapiens <220> <221> CDS
 <222> (3)..(77) <223>
 <400> 75
 gc agt tta acg ggg gag ggg act cag ccc cag cat ttt ggt gat ggg 47
 Ser Leu Thr Gly Glu Gly Thr Gln Pro Gln His Phe Gly Asp Gly
 1 5 10 15
 act cga ctc tcc atc cta gag gac ctg aac aa
 Thr Arg Leu Ser Ile Leu Glu Asp Leu Asn 79
 20 25

<210> 76 <211> 25 <212> PRT <213> Homo sapiens <400> 76

Ser Leu Thr Gly Glu Gly Thr Gln Pro Gln His Phe Gly Asp Gly Thr
1 5 10 15

Arg Leu Ser Ile Leu Glu Asp Leu Asn
20 25

<210> 77 <211> 1197 <212> DNA <213> Streptococcus pyogenes <220>
<221> CDS <222> (106)..(1119) <223>

<400> 77
atggctctg gagatggatt ataaagagat tgcatgtcc aaagggtgcaa ctatcacagg 60
ggcatggtca gacagtccac aaatttatatt agacggaggt aaaaa atg agt gaa aat 117
Met Ser Glu Asn
1
ata ccg ctg cga gtc caa ttt aag cgc atg aaa gcc gcc gag tgg gct 165
Ile Pro Leu Arg Val Gln Phe Lys Arg Met Lys Ala Ala Glu Trp Ala
5 10 15 20
cgt agt gat gtc atc tta ctg gag agc gag ata ggc ttt gag aca gac 213
Arg Ser Asp Val Ile Leu Leu Glu Ser Glu Ile Gly Phe Glu Thr Asp
25 30 35
aca ggt ttt gcc aga gca ggt gat ggg cac aat cga ttt agt gac ctt 261
Thr Gly Ala Arg Ala Gly Asp Gly His Asn Arg Phe Ser Asp Leu
40 45 50
gga tac att agt cca ctc gat tac aat cta ctg act aac aag cca aat 309
Gly Tyr Ile Ser Pro Leu Asp Tyr Asn Leu Leu Thr Asn Lys Pro Asn
55 60 65
att gat gga tta gcg aca aaa gtc gag acc gct cag aaa cta caa caa 357
Ile Asp Gly Leu Ala Thr Lys Val Glu Thr Ala Gln Lys Leu Gln Gln
70 75 80
aaa gca gat aaa gag acc gtc tat aca aaa gct gaa tcg aag caa gag 405
Lys Ala Asp Lys Glu Thr Val Tyr Thr Lys Ala Glu Ser Lys Gln Glu
85 90 95 100
ctt gac aag aaa tta aat ctc aaa ggt ggc gtt atg aca ggt caa cta 453
Leu Asp Lys Lys Leu Asn Leu Lys Gly Gly Val Met Thr Gly Gln Leu
105 110 115
aaa ttt aag cca gcc gcc act gtt gct tat tcc tcg tca acg ggt gga 501
Lys Phe Lys Pro Ala Ala Thr Val Ala Tyr Ser Ser Thr Gly Gly
120 125 130
gct gtc aat att gac ttg tcg tct acc aga ggt gct ggt gtt gtt gtc 549
Ala Val Asn Ile Asp Leu Ser Ser Thr Arg Gly Ala Gly Val Val Val
135 140 145
tat tct gac aat gat acc agt gat ggg ccg tta atg agc ttg cggt acg 597
Tyr Ser Asp Asn Asp Thr Ser Asp Gly Pro Leu Met Ser Leu Arg Thr

150	155	160	
ggt aaa gag acc ttt aat caa tcg gcg ctt ttt gtc gac tat aag ggg Gly Lys Glu Thr Phe Asn Gln Ser Ala Leu Phe Val Asp Tyr Lys Gly 165 170 175 180			645
aca aca aat gcc gtt aat att gcg atg cgt cac gca acc acc ccc aat Thr Thr Asn Ala Val Asn Ile Ala Met Arg His Ala Thr Thr Pro Asn 185 190 195			693
ttt tca tcg gcg ctt aat att act agc ggc aat gaa aat ggt agt gca Phe Ser Ser Ala Leu Asn Ile Thr Ser Gly Asn Glu Asn Gly Ser Ala 200 205 210			741
atg cag cta cga ggg tca gaa aaa gcg cta gga acg cta aaa att act Met Gln Leu Arg Gly Ser Glu Lys Ala Leu Gly Thr Leu Lys Ile Thr 215 220 225			789
cat gag aac cca agt att gga gcg gat tat gat aaa aat gcg gca cgt His Glu Asn Pro Ser Ile Gly Ala Asp Tyr Asp Lys Asn Ala Ala Arg 230 235 240			837
tat cca ttg ata ttg tca aaa aga caa aac ggt gca gga aca gcc gct Tyr Pro Leu Ile Leu Ser Lys Arg Gln Asn Gly Ala Gly Thr Ala Ala 245 250 255 260			885
cag gga atc tac att aac tca acc tca ggc acg aca ggg aag ttg ctt Gln Gly Ile Tyr Ile Asn Ser Thr Ser Gly Thr Thr Gly Lys Leu Leu 265 270 275			933
agg att aga aac ctt agt gat gat aag ttc tac gtc aag tct gac ggt Arg Ile Arg Asn Leu Ser Asp Asp Lys Phe Tyr Val Lys Ser Asp Gly 280 285 290			981
ggt ttt tat gcc aag gaa act tcg cag att gat ggc aac ctg aaa ctc Gly Phe Tyr Ala Lys Glu Thr Ser Gln Ile Asp Gly Asn Leu Lys Leu 295 300 305			1029
aag gac ccc aca gcg aat gat cat gcg gca acc aaa gct tat gta gat Lys Asp Pro Thr Ala Asn Asp His Ala Ala Thr Lys Ala Tyr Val Asp 310 315 320			1077
aaa gca att tct gag tta aaa aaa ctc ata cta aaa aaa tag Lys Ala Ile Ser Glu Leu Lys Leu Ile Leu Lys Lys 325 330 335			1119
attaaggagg ataaatgagc agagacccaa cacttatttt agacgagtca aacctcgta			1179
ttggtaagga tggacgtg			1197
 <210> 78 <211> 337 <212> PRT <213> Streptococcus pyogenes <400> 78			
Met Ser Glu Asn Ile Pro Leu Arg Val Gln Phe Lys Arg Met Lys Ala 1 5 10 15			
 Ala Glu Trp Ala Arg Ser Asp Val Ile Leu Leu Glu Ser Glu Ile Gly 20 25 30			

Phe Glu Thr Asp Thr Gly Phe Ala Arg Ala Gly Asp Gly His Asn Arg
35 40 45

Phe Ser Asp Leu Gly Tyr Ile Ser Pro Leu Asp Tyr Asn Leu Leu Thr
50 55 60

Asn Lys Pro Asn Ile Asp Gly Leu Ala Thr Lys Val Glu Thr Ala Gln
65 70 75 80

Lys Leu Gln Gln Lys Ala Asp Lys Glu Thr Val Tyr Thr Lys Ala Glu
85 90 95

Ser Lys Gln Glu Leu Asp Lys Lys Leu Asn Leu Lys Gly Gly Val Met
100 105 110

Thr Gly Gln Leu Lys Phe Lys Pro Ala Ala Thr Val Ala Tyr Ser Ser
115 120 125

Ser Thr Gly Gly Ala Val Asn Ile Asp Leu Ser Ser Thr Arg Gly Ala
130 135 140

Gly Val Val Val Tyr Ser Asp Asn Asp Thr Ser Asp Gly Pro Leu Met
145 150 155 160

Ser Leu Arg Thr Gly Lys Glu Thr Phe Asn Gln Ser Ala Leu Phe Val
165 170 175

Asp Tyr Lys Gly Thr Thr Asn Ala Val Asn Ile Ala Met Arg His Ala
180 185 190

Thr Thr Pro Asn Phe Ser Ser Ala Leu Asn Ile Thr Ser Gly Asn Glu
195 200 205

Asn Gly Ser Ala Met Gln Leu Arg Gly Ser Glu Lys Ala Leu Gly Thr
210 215 220

Leu Lys Ile Thr His Glu Asn Pro Ser Ile Gly Ala Asp Tyr Asp Lys
225 230 235 240

Asn Ala Ala Arg Tyr Pro Leu Ile Leu Ser Lys Arg Gln Asn Gly Ala
245 250 255

Gly Thr Ala Ala Gln Gly Ile Tyr Ile Asn Ser Thr Ser Gly Thr Thr
260 265 270

Gly Lys Leu Leu Arg Ile Arg Asn Leu Ser Asp Asp Lys Phe Tyr Val
275 280 285

Lys Ser Asp Gly Gly Phe Tyr Ala Lys Glu Thr Ser Gln Ile Asp Gly
290 295 300

Asn Leu Lys Leu Lys Asp Pro Thr Ala Asn Asp His Ala Ala Thr Lys
305 310 315 320

Ala Tyr Val Asp Lys Ala Ile Ser Glu Leu Lys Lys Leu Ile Leu Lys
325 330 335

Lys

<210> 79 <211> 1497 <212> DNA <213> Bacteriophage T270 <220> <221>
CDS <222> (286)..(1374) <223>

<400> 79
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tataatgcgt ttcaacaaga tattgagcaa gataaaaacc agatagcact attgttcaac 120
gaacatcaat tgcttgaaaa tatcgataat tagttaatct aaaacaaaaa gccccacgct 180
ctcaaagttt ggcgactctg agcgtgaggc aagacagtat aagaaacaac cattaaaaag 240
gtcattttct tgtacctatt ttatcaaatt gaaagatggt atgca atg aaa att aaa 297
Met Lys Ile Lys
1

tca tat aaa aag gaa aat ggt gaa act gct tat aaa ttt ctt ttg tat 345
Ser Tyr Lys Lys Glu Asn Gly Glu Thr Ala Tyr Lys Phe Leu Leu Tyr
5 10 15 20

gcc ggt tat gtt aat gga aag aga aaa tat att agg cga gaa ggt ttc 393
Ala Gly Tyr Val Asn Gly Lys Arg Lys Tyr Ile Arg Arg Glu Gly Phe
25 30 35

aaa act aag cag gct gca agg gaa acc tta att agt tta caa gct gaa 441
Lys Thr Lys Gln Ala Ala Arg Glu Thr Leu Ile Ser Leu Gln Ala Glu
40 45 50

ctt gat aaa cct aaa tca agt atg aca ttt gga gca ttg aca gat caa 489
Leu Asp Lys Pro Lys Ser Ser Met Thr Phe Gly Ala Leu Thr Asp Gln
55 60 65

tgg cta aag gaa tat gaa aaa acc gtt cag ggc agt acc tac tta aaa 537
Trp Leu Lys Glu Tyr Glu Lys Thr Val Gln Gly Ser Thr Tyr Leu Lys
70 75 80

aca gaa aga aat att aat aaa cat att ttg cca aaa ctt gat aaa gtg 585
Thr Glu Arg Asn Ile Asn Lys His Ile Leu Pro Lys Leu Asp Lys Val
85 90 95 100

aag att gga gac atc aat cca cta ctt atc cag cgg ctt act gaa gaa Lys Ile Gly Asp Ile Asn Pro Leu Leu Ile Gln Arg Leu Thr Glu Glu 105 110 115	633
tgg tgc aac gat tta aaa tat gga gga aaa att ctt ggg ctt gtt agg Trp Cys Asn Asp Leu Lys Tyr Gly Gly Lys Ile Leu Gly Leu Val Arg 120 125 130	681
aat atc tta aat cta gct gtt aga tac gga tat atc aat aac aat cca Asn Ile Leu Asn Leu Ala Val Arg Tyr Gly Tyr Ile Asn Asn Asn Pro 135 140 145	729
gct ttg cca att aca cct cca aaa ata aaa agg aaa aga aaa atg aat Ala Leu Pro Ile Thr Pro Pro Lys Ile Lys Arg Lys Arg Lys Met Asn 150 155 160	777
aat aat ttt tat aca ctt gat caa ctt aaa caa ttc ctt gaa cta gtt Asn Asn Phe Tyr Thr Leu Asp Gln Leu Lys Gln Phe Leu Glu Leu Val 165 170 175 180	825
gaa aaa act gac aac att gaa aaa ata gcc ttg ttt aga tta tta gca Glu Lys Thr Asp Asn Ile Glu Lys Ile Ala Leu Phe Arg Leu Ala 185 190 195	873
ttt act gga ata cga aaa ggg gag ctt ctg gca cta act tgg gat gat Phe Thr Gly Ile Arg Lys Gly Glu Leu Leu Ala Leu Thr Trp Asp Asp 200 205 210	921
ttg aat ggt aat act cta tca att aat aaa gct gtc aca cgt act caa Leu Asn Gly Asn Thr Leu Ser Ile Asn Lys Ala Val Thr Arg Thr Gln 215 220 225	969
gtt gga cta gaa ata gat gtt acg aag aca aaa tca agc gat aga tta Val Gly Leu Glu Ile Asp Val Thr Lys Thr Lys Ser Ser Asp Arg Leu 230 235 240	1017
atc agc tta gat gat gaa act ttg gaa att tta caa gaa ctt cat gaa Ile Ser Leu Asp Asp Glu Thr Leu Glu Ile Leu Gln Glu Leu His Glu 245 250 255 260	1065
act ttt cct act tct act ctt atg ttc caa tct aaa tca ggt gga att Thr Phe Pro Thr Ser Thr Leu Met Phe Gln Ser Lys Ser Gly Gly Ile 265 270 275	1113
atg acg cca agt tta cca cga aaa tgg cta ttg caa att atc aaa ggg Met Thr Pro Ser Leu Pro Arg Lys Trp Leu Leu Gln Ile Ile Lys Gly 280 285 290	1161
ata gac tta cca caa atc aca att cat ggt ttc agg cac act cat gca Ile Asp Leu Pro Gln Ile Thr Ile His Gly Phe Arg His Thr His Ala 295 300 305	1209
agc tta ctt ttc gaa tca ggt cta tcc ttg aaa cag gtg caa cat aga Ser Leu Leu Phe Glu Ser Gly Leu Ser Leu Lys Gln Val Gln His Arg 310 315 320	1257
tta ggg cat gga gat tta cag aca act atg aac gta tat act cac atc Leu Gly His Gly Asp Leu Gln Thr Thr Met Asn Val Tyr Thr His Ile 325 330 335 340	1305

acg caa tcg gca att gat gac att gga act aaa ttc aat caa ttt gtt 1353
 Thr Gln Ser Ala Ile Asp Asp Ile Gly Thr Lys Phe Asn Gln Phe Val
 345 350 355

 act aac aag caa cta gat tga caactaattc tcaaccaaacg ttaatttaac 1404
 Thr Asn Lys Gln Leu Asp
 360

 aacattcaag taactccac cagctccatc aatgcttacc gtaagtaatc ataacttact 1464

 aaaaccttgt tacatcaagg tttttcttt ttg 1497

 <210> 80 <211> 362 <212> PRT <213> Bacteriophage T270 <400> 80

 Met Lys Ile Lys Ser Tyr Lys Lys Glu Asn Gly Glu Thr Ala Tyr Lys
 1 5 10 15

 Phe Leu Leu Tyr Ala Gly Tyr Val Asn Gly Lys Arg Lys Tyr Ile Arg
 20 25 30

 Arg Glu Gly Phe Lys Thr Lys Gln Ala Ala Arg Glu Thr Leu Ile Ser
 35 40 45

 Leu Gln Ala Glu Leu Asp Lys Pro Lys Ser Ser Met Thr Phe Gly Ala
 50 55 60

 Leu Thr Asp Gln Trp Leu Lys Glu Tyr Glu Lys Thr Val Gln Gly Ser
 65 70 75 80

 Thr Tyr Leu Lys Thr Glu Arg Asn Ile Asn Lys His Ile Leu Pro Lys
 85 90 95

 Leu Asp Lys Val Lys Ile Gly Asp Ile Asn Pro Leu Leu Ile Gln Arg
 100 105 110

 Leu Thr Glu Glu Trp Cys Asn Asp Leu Lys Tyr Gly Gly Lys Ile Leu
 115 120 125

 Gly Leu Val Arg Asn Ile Leu Asn Leu Ala Val Arg Tyr Gly Tyr Ile
 130 135 140

 Asn Asn Asn Pro Ala Leu Pro Ile Thr Pro Pro Lys Ile Lys Arg Lys
 145 150 155 160

 Arg Lys Met Asn Asn Asn Phe Tyr Thr Leu Asp Gln Leu Lys Gln Phe
 165 170 175

Leu Glu Leu Val Glu Lys Thr Asp Asn Ile Glu Lys Ile Ala Leu Phe
 180 185 190

Arg Leu Leu Ala Phe Thr Gly Ile Arg Lys Gly Glu Leu Leu Ala Leu
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Thr Trp Asp Asp Leu Asn Gly Asn Thr Leu Ser Ile Asn Lys Ala Val
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Thr Arg Thr Gln Val Gly Leu Glu Ile Asp Val Thr Lys Thr Lys Ser
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Ser Asp Arg Leu Ile Ser Leu Asp Asp Glu Thr Leu Glu Ile Leu Gln
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Glu Leu His Glu Thr Phe Pro Thr Ser Thr Leu Met Phe Gln Ser Lys
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Ser Gly Gly Ile Met Thr Pro Ser Leu Pro Arg Lys Trp Leu Leu Gln
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Ile Ile Lys Gly Ile Asp Leu Pro Gln Ile Thr Ile His Gly Phe Arg
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His Thr His Ala Ser Leu Leu Phe Glu Ser Gly Leu Ser Leu Lys Gln
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Val Gln His Arg Leu Gly His Gly Asp Leu Gln Thr Thr Met Asn Val
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Thr Gln Ser Glu Asp Ser Arg Cys Gly Ala Gly His Asp Arg Lys Ile	
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Arg Ala Glu Gln Met Lys Glu Ile Ser Asp Phe Val Lys Lys Lys Asn	
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Ile Pro Lys Asp Glu Thr Val Tyr Ile Gly Gly Asp Leu Asn Val Asn	
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Lys Gly Thr Pro Glu Phe Lys Asp Met Leu Lys Asn Leu Asn Val Asn	
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Asp Val Leu Tyr Ala Gly His Asn Ser Thr Trp Asp Pro Gln Ser Asn	
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tca att gcg aaa tat aat tac cct aat ggt aaa cca gaa cat tta gac	1588
Ser Ile Ala Lys Tyr Asn Tyr Pro Asn Gly Lys Pro Glu His Leu Asp	
265 270 275	
tat ata ttt aca gat aaa gat cat aaa caa cca aaa caa tta gtc aat	1636
Tyr Ile Phe Thr Asp Lys Asp His Lys Gln Pro Lys Gln Leu Val Asn	
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Tyr Ser Lys	
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Ser Asn Lys Gly Phe Val Tyr Thr Lys Ile Glu Lys Asn Gly Lys Asn
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Val His Val Ile Gly Thr His Thr Gln Ser Glu Asp Ser Arg Cys Gly
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Ala Gly His Asp Arg Lys Ile Arg Ala Glu Gln Met Lys Glu Ile Ser
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Thr Ala Cys Phe Ser Tyr Asn Ile Trp Ser Ile Ile Glu Lys Ile Ile			
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DRAFT PROTEIN SEQUENCE

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attccatttt attcttaaaa atatttttt actcatatgt aataaaccgc tttcattata 480
aaaaatatct atatattttt tctgtttta ttaatcgaa tagcgtgatt ttgcggtttt 540
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ttacctttaa atttaattat aaatataaat ttttagtattt caatacataa ttcttataat 660
tatgtgact ttacaaatac atacaggggg tattaaat ttg aaa aag aaa aac att 715
Leu Lys Lys Lys Asn Ile
1 5
tat tca att cgt aaa cta ggt gta ggt att gca tct gta act tta ggt 763
Tyr Ser Ile Arg Lys Leu Gly Val Gly Ile Ala Ser Val Thr Leu Gly
10 15 20
aca tta ctt ata tct ggt ggc gta aca cct gct gca aat gct gcg caa 811
Thr Leu Leu Ile Ser Gly Gly Val Thr Pro Ala Ala Asn Ala Ala Gln

25	30	35	
cac gat gaa gct caa caa aat gct ttt tat caa gtg tta aat atg cct His Asp Glu Ala Gln Gln Asn Ala Phe Tyr Gln Val Leu Asn Met Pro 40 45 50			859
aac tta aac gct gat caa cgt aat ggt ttt atc caa agc ctt aaa gat Asn Leu Asn Ala Asp Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp 55 60 65 70			907
gat cca agc caa agt gct aac gtt tta ggt gaa gct caa aaa ctt aat Asp Pro Ser Gln Ser Ala Asn Val Leu Gly Glu Ala Gln Lys Leu Asn 75 80 85			955
gac tct caa gct cca aaa gct gat gcg caa caa aat aag ttc aac aaa Asp Ser Gln Ala Pro Lys Ala Asp Ala Gln Gln Asn Lys Phe Asn Lys 90 95 100			1003
gat caa caa agc gcc ttc tat gaa atc ttg aac atg cct aac tta aac Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn 105 110 115			1051
gaa gag caa cgc aat ggt ttc att caa agt ctt aaa gac gat cca agc Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser 120 125 130			1099
caa agc act aac gtt tta ggt gaa gct aaa aaa tta aac gaa tct caa Gln Ser Thr Asn Val Leu Gly Glu Ala Lys Lys Leu Asn Glu Ser Gln 135 140 145 150			1147
gca ccg aaa gct gac aac aat ttc aac aaa gaa caa caa aat gct ttc Ala Pro Lys Ala Asp Asn Asn Phe Asn Lys Glu Gln Gln Asn Ala Phe 155 160 165			1195
tat gaa atc ttg aac atg cct aac ttg aac gaa gaa caa cgc aat ggt Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly 170 175 180			1243
ttc atc caa agc tta aaa gat gac cca agt caa agt gct aac ctt tta Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu 185 190 195			1291
gca gaa gct aaa aag tta aat gaa tct caa gca ccg aaa gct gat aac Ala Glu Ala Lys Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn 200 205 210			1339
aaa ttc aac aaa gaa caa caa aat gct ttc tat gaa atc tta cat tta Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His Leu 215 220 225 230			1387
cct aac tta aat gaa gaa caa cgc aat ggt ttc atc caa agc tta aaa Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys 235 240 245			1435
gat gac cca agc caa agc gct aac ctt tta gca gaa gct aaa aag cta Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu Ala Glu Ala Lys Lys Leu 250 255 260			1483
aat gat gca caa gca cca aaa gct gac aac aaa ttc aac aaa gaa caa Asn Asp Ala Gln Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln			1531

265	270	275	
caa aat gct ttc tat gaa att tta cat tta cct aac tta act gaa gaa Gln Asn Ala Phe Tyr Glu Ile Leu His Leu Pro Asn Leu Thr Glu Glu 280	285	290	1579
caa cgt aac ggc ttc atc caa agc ctt aaa gac gat cct tca gtg agc Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Val Ser 295	300	305	1627
aaa gaa att tta gca gaa gct aaa aag cta aac gat gct caa gca cca Lys Glu Ile Leu Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro 315	320	325	1675
aaa gag gaa gac aac aac aag cct ggt aaa gaa gac ggc aac aaa cct Lys Glu Glu Asp Asn Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro 330	335	340	1723
ggt aaa gaa gac ggc aac aaa cct ggt aaa gaa gac aac aaa aaa cct Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Asn Lys Lys Pro 345	350	355	1771
ggc aaa gaa gac ggc aac aaa cct ggt aaa gaa gac aac aaa aaa cct Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Asn Lys Lys Pro 360	365	370	1819
ggc aaa gaa gat ggc aac aaa cct ggt aaa gaa gac ggc aac aag cct Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro 375	380	385	1867
ggt aaa gaa gat ggc aac aag cct ggt aaa gaa gat ggc aac aag cct Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro 395	400	405	1915
ggt aaa gaa gac ggc aac gga gta cat gtc gtt aaa cct ggt gat aca Gly Lys Glu Asp Gly Asn Gly Val His Val Val Lys Pro Gly Asp Thr 410	415	420	1963
gta aat gac att gca aaa gca aac ggc act act gct gac aaa att gct Val Asn Asp Ile Ala Lys Ala Asn Gly Thr Thr Ala Asp Lys Ile Ala 425	430	435	2011
gca gat aac aaa tta gct gat aaa aac atg atc aaa cct ggt caa gaa Ala Asp Asn Lys Leu Ala Asp Lys Asn Met Ile Lys Pro Gly Gln Glu 440	445	450	2059
ctt gtt gtt gat aag aag caa cca gca aac cat gca gat gct aac aaa Leu Val Val Asp Lys Lys Gln Pro Ala Asn His Ala Asp Ala Asn Lys 455	460	465	2107
gct caa gca tta cca gaa act ggt gaa gaa aat cca ttc atc ggt aca Ala Gln Ala Leu Pro Glu Thr Gly Glu Glu Asn Pro Phe Ile Gly Thr 475	480	485	2155
act gta ttt ggt gga tta tca tta gcg tta ggt gca gcg tta tta gct Thr Val Phe Gly Gly Leu Ser Leu Ala Leu Gly Ala Ala Leu Leu Ala 490	495	500	2203
gga cgt cgt cgc gaa cta taa aaacaaacaa tacacaacga tagatatc Gly Arg Arg Arg Glu Leu			2252

505

<210> 88 <211> 508 <212> PRT <213> Staphylococcus aureus <400> 88

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Ala Ser Val Thr Leu Gly Thr Leu Leu Ile Ser Gly Gly Val Thr Pro
20 25 30

Ala Ala Asn Ala Ala Gln His Asp Glu Ala Gln Gln Asn Ala Phe Tyr
35 40 45

Gln Val Leu Asn Met Pro Asn Leu Asn Ala Asp Gln Arg Asn Gly Phe
50 55 60

Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Val Leu Gly
65 70 75 80

Glu Ala Gln Lys Leu Asn Asp Ser Gln Ala Pro Lys Ala Asp Ala Gln
85 90 95

Gln Asn Lys Phe Asn Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu
100 105 110

Asn Met Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser
115 120 125

Leu Lys Asp Asp Pro Ser Gln Ser Thr Asn Val Leu Gly Glu Ala Lys
130 135 140

Lys Leu Asn Glu Ser Gln Ala Pro Lys Ala Asp Asn Asn Phe Asn Lys
145 150 155 160

Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu Asn
165 170 175

Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser
180 185 190

Gln Ser Ala Asn Leu Leu Ala Glu Ala Lys Lys Leu Asn Glu Ser Gln
195 200 205

Ala Pro Lys Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe
210 215 220

Tyr Glu Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly
225 230 235 240

Phe Ile Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu
245 250 255

Ala Glu Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Ala Asp Asn
260 265 270

Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu Ile Leu His Leu
275 280 285

Pro Asn Leu Thr Glu Glu Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys
290 295 300

Asp Asp Pro Ser Val Ser Lys Glu Ile Leu Ala Glu Ala Lys Lys Leu
305 310 315 320

Asn Asp Ala Gln Ala Pro Lys Glu Glu Asp Asn Asn Lys Pro Gly Lys
325 330 335

Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
340 345 350

Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
355 360 365

Glu Asp Asn Lys Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
370 375 380

Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Lys Pro Gly Lys
385 390 395 400

Glu Asp Gly Asn Lys Pro Gly Lys Glu Asp Gly Asn Gly Val His Val
405 410 415

Val Lys Pro Gly Asp Thr Val Asn Asp Ile Ala Lys Ala Asn Gly Thr
420 425 430

Thr Ala Asp Lys Ile Ala Ala Asp Asn Lys Leu Ala Asp Lys Asn Met
435 440 445

Ile Lys Pro Gly Gln Glu Leu Val Val Asp Lys Lys Gln Pro Ala Asn
450 455 460

His Ala Asp Ala Asn Lys Ala Gln Ala Leu Pro Glu Thr Gly Glu Glu
465 470 475 480

Asn Pro Phe Ile Gly Thr Thr Val Phe Gly Gly Leu Ser Leu Ala Leu
485 490 495

Gly Ala Ala Leu Leu Ala Gly Arg Arg Arg Glu Leu
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ggt gga cag caa atg ggt cgg gat ctg tac gac gat gac gat aag gat 96
Gly Gly Gln Gln Met Gly Arg Asp Leu Tyr Asp Asp Asp Lys Asp
20 25 30

ccg agc tcg aga gga tcc aaa gct gat gcg caa caa aat aac ttc aac 144
Pro Ser Ser Arg Gly Ser Lys Ala Asp Ala Gln Gln Asn Asn Phe Asn
35 40 45

aaa gat caa caa agc gcc ttc tat gaa atc ttg aac atg cct aac tta 192
Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu
50 55 60

aac gaa gcg caa cgc aac ggc ttc att caa agt ctt aaa gac gac cca 240
Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro
65 70 75 80

agc caa agc act aac gtt tta ggt gaa gct aaa aaa tta aac gaa tct 288
Ser Gln Ser Thr Asn Val Leu Gly Glu Ala Lys Lys Leu Asn Glu Ser
85 90 95

caa gca ggg aaa cta gtt tag aaa gct tgatccggc 324
Gln Ala Gly Lys Leu Val Lys Ala
100

<210> 90 <211> 104 <212> PRT <213> Staphylococcus aureus <400> 90

Met Arg Gly Ser His His His His His Gly Met Ala Ser Met Thr
1 5 10 15

Gly Gly Gln Gln Met Gly Arg Asp Leu Tyr Asp Asp Asp Lys Asp
20 25 30

Pro Ser Ser Arg Gly Ser Lys Ala Asp Ala Gln Gln Asn Asn Phe Asn
35 40 45

Lys Asp Gln Gln Ser Ala Phe Tyr Glu Ile Leu Asn Met Pro Asn Leu
50 55 60

Asn Glu Ala Gln Arg Asn Gly Phe Ile Gln Ser Leu Lys Asp Asp Pro
65 70 75 80

Ser Gln Ser Thr Asn Val Leu Gly Glu Ala Lys Lys Leu Asn Glu Ser
85 90 95

Gln Ala Gly Lys Leu Val Lys Ala
100

<210> 91 <211> 60 <212> PRT <213> Staphylococcus aureus <400> 91

Thr Ala Asp Asn Lys Phe Asn Lys Glu Gln Gln Asn Ala Phe Tyr Glu
1 5 10 15

Ile Leu His Leu Pro Asn Leu Asn Glu Glu Gln Arg Asn Gly Phe Ile
20 25 30

Gln Ser Leu Lys Asp Asp Pro Ser Gln Ser Ala Asn Leu Leu Ala Glu
35 40 45

Ala Lys Lys Leu Asn Asp Ala Gln Ala Pro Lys Ala
50 55 60

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Tyr Gly Lys Ile Ile Phe Val Leu Leu Ser Ala Ile Val Ser Ile
5 10 15

tca gca tca agt acc act ggt gtg gca atg cac act tca acc tct tct 154
Ser Ala Ser Ser Thr Thr Gly Val Ala Met His Thr Ser Thr Ser Ser
20 25 30

tca gtc aca aag agt tac atc tca tca cag aca aat gat acg cac aaa 202
Ser Val Thr Lys Ser Tyr Ile Ser Ser Gln Thr Asn Asp Thr His Lys
35 40 45

cgg gac aca tat gca gcc act cct aga gct cat gaa gtt tca gaa att 250
Arg Asp Thr Tyr Ala Ala Thr Pro Arg Ala His Glu Val Ser Glu Ile
50 55 60 65

tct gtt aga act gtt tac cct cca gaa gág gaa acc gga gaa agg gta	298
Ser Val Arg Thr Val Tyr Pro Pro Glu Glu Glu Thr Gly Glu Arg Val	
70 75 80	
caa ctt gcc cat cat ttc tct gaa cca gag ata aca ctc att att ttt	346
Gln Leu Ala His His Phe Ser Glu Pro Glu Ile Thr Ile Ile Ile Phe	
85 90 95	
ggg gtg atg gct ggt gtt att gga acg atc ctc tta att tct tac ggt	394
Gly Val Met Ala Gly Val Ile Gly Thr Ile Leu Leu Ile Ser Tyr Gly	
100 105 110	
att cgc cga ctg ata aag aaa agc cca tct gat gta aaa cct ctc ccc	442
Ile Arg Arg Leu Ile Lys Lys Ser Pro Ser Asp Val Lys Pro Leu Pro	
115 120 125	
tca cct gac aca gac gtg cct tta agt tct gtt gaa ata gaa aat cca	490
Ser Pro Asp Thr Asp Val Pro Leu Ser Ser Val Glu Ile Glu Asn Pro	
130 135 140 145	
gag aca agt gat caa tga gaatctgttc accaaaccaa atgtggaaag	538
Glu Thr Ser Asp Gln	
150	
aacacaaaaga agacataaga cttcagtcaa gtgaaaaatt aacatgtgga ctggacactc	598
caataaaatta tatacctgcc taagttgtac aatttcagaa tgcaattttc attataatga	658
gttccagtga ctcaatgatg gggaaaaaaaaa tctctgctca ttaatatttc aagataaaaga	718
acaaaatgttt ccttgaatgc ttgctttgt gtgttagcat aatttttaga attgttttag	778
aattctgatc caaaacttta gttgaattca tctacgtttg ttaatattta acttaaccta	838
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cacacaaaaca cacacattt tcatttaatg cataaatcaa cacaaaaggt tttccattt	1138
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gagttatccc ggagaaggaa aaagaactta cgacctttct ttataacaga aagctcaact	1318
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gataaccaag taaatgtttt ctatttcga tatttcagg catggtaaca gaaatttacc 1678
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ccctcccaac actgttacaa tggcaattaa atttcaacaa agttccaga ggtgacattc 2458
gaatcagcaa taaaattttc atagtlaaat ttggtattcg tggggaga aatgaccatt 2518
tcccttgtat tttataatt aaatcagcaa aatattgtaa taaagaaatc ttccctgtga 2578
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20 25 30

Ser Ser Val Thr Lys Ser Tyr Ile Ser Ser Gln Thr Asn Asp Thr His
35 40 45

Lys Arg Asp Thr Tyr Ala Ala Thr Pro Arg Ala His Glu Val Ser Glu
50 55 60

Ile Ser Val Arg Thr Val Tyr Pro Pro Glu Glu Glu Thr Gly Glu Arg
65 70 75 80

Val Gln Leu Ala His His Phe Ser Glu Pro Glu Ile Thr Leu Ile Ile
85 90 95

Phe Gly Val Met Ala Gly Val Ile Gly Thr Ile Leu Leu Ile Ser Tyr
100 105 110

Gly Ile Arg Arg Leu Ile Lys Lys Ser Pro Ser Asp Val Lys Pro Leu
115 120 125

Pro Ser Pro Asp Thr Asp Val Pro Leu Ser Ser Val Glu Ile Glu Asn
130 135 140

Pro Glu Thr Ser Asp Gln
145 150

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<222> (104)..(4474) <223>

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gccctcctgt ccatcaggag aaggaaagga taaaccctgg gcc atg agg cta ccc 115
Met Arg Ieu Pro
1
ctg ctc ctg gtt ttt gcc tct gtc att ccg ggt gct gtt ctc cta ctg 163
Leu Leu Leu Val Phe Ala Ser Val Ile Pro Gly Ala Val Leu Leu
5 10 15 20
gac acc agg caa ttt tta atc tat aat gaa gat cac aag cgc tgc gtg 211
Asp Thr Arg Gln Phe Leu Ile Tyr Asn Glu Asp His Lys Arg Cys Val
25 30 35
gat gca gtg agt ccc agt gcc gtc caa acc gca gct tgc aac cag gat 259
Asp Ala Val Ser Pro Ser Ala Val Gln Thr Ala Ala Cys Asn Gln Asp
40 45 50
gcc gaa tca cag aaa ttc cga tgg gtg tcc gaa tct cag att atg agt 307
Ala Glu Ser Gln Lys Phe Arg Trp Val Ser Glu Ser Gln Ile Met Ser
55 60 65
gtt gca ttt aaa tta tgc ctg gga gtg cca tca aaa aca gac tgg gtt 355
Val Ala Phe Lys Leu Cys Leu Gly Val Pro Ser Lys Thr Asp Trp Val
70 75 80
gct atc act ctc tat gcc tgt gac tca aaa agt gaa ttt cag aaa tgg 403
Ala Ile Thr Leu Tyr Ala Cys Asp Ser Lys Ser Glu Phe Gln Lys Trp
85 90 95 100
gag tgc aaa aat gac aca ctt ttg ggg atc aaa gga gaa gat tta ttt 451
Glu Cys Lys Asn Asp Thr Leu Leu Gly Ile Lys Gly Glu Asp Leu Phe
105 110 115
ttt aac tac ggc aac aga caa gaa aag aat att atg ctc tac aag gga 499
Phe Asn Tyr Gly Asn Arg Gln Glu Lys Asn Ile Met Leu Tyr Lys Gly
120 125 130
tcg ggt tta tgg agc agg tgg aag atc tat gga acc aca gac aat ctg 547

Ser	Gly	Leu	Trp	Ser	Arg	Trp	Lys	Ile	Tyr	Gly	Thr	Thr	Asp	Asn	Leu	
135								140							145	
tgc	tcc	aga	gtt	tat	gaa	gcc	atg	tat	acg	cta	cta	gdc	aat	gcc	aat	595
Cys	Ser	Arg	Gly	Tyr	Glu	Ala	Met	Tyr	Thr	Leu	Leu	Gly	Asn	Ala	Asn	
150								155						160		
gga	gca	acc	tgt	gca	ttc	ccg	ttc	aag	ttt	gaa	aac	aag	tgg	tac	gca	643
Gly	Ala	Thr	Cys	Ala	Phe	Pro	Phe	Lys	Phe	Glu	Asn	Lys	Trp	Tyr	Ala	
165								170					175		180	
gat	tgc	acg	agt	gct	ggg	cgg	tgc	gat	gga	tgg	ctc	tgg	tgc	gga	acc	691
Asp	Cys	Thr	Ser	Ala	Gly	Arg	Ser	Asp	Gly	Trp	Leu	Trp	Cys	Gly	Thr	
185								190					195			
act	act	gac	tat	gac	aca	gac	aag	cta	ttt	gga	tat	tgt	cca	ttg	aaa	739
Thr	Thr	Asp	Tyr	Asp	Thr	Asp	Lys	Leu	Phe	Gly	Tyr	Cys	Pro	Leu	Lys	
200								205					210			
ttt	gag	ggc	agt	gaa	agc	tta	tgg	aat	aaa	gac	ccg	ctg	acc	agc	gtt	787
Phe	Glu	Gly	Ser	Glu	Ser	Leu	Trp	Asn	Lys	Asp	Pro	Leu	Thr	Ser	Val	
215								220					225			
tcc	tac	cag	ata	aac	tcc	aaa	tcc	gct	tta	acg	tgg	cac	caa	gcg	agg	835
Ser	Tyr	Gln	Ile	Asn	Ser	Lys	Ser	Ala	Leu	Thr	Trp	His	Gln	Ala	Arg	
230								235					240			
aaa	agc	tgc	caa	caa	cag	aac	gct	gag	ctc	ctg	agc	atc	aca	gag	ata	883
Lys	Ser	Cys	Gln	Gln	Gln	Asn	Ala	Glu	Leu	Leu	Ser	Ile	Thr	Glu	Ile	
245								250					255		260	
cat	gag	caa	aca	tac	ctg	aca	gga	tta	acc	agt	tcc	ttg	acc	tca	gga	931
His	Glu	Gln	Thr	Tyr	Leu	Thr	Gly	Leu	Thr	Ser	Ser	Leu	Thr	Ser	Gly	
265								270					275			
ctc	tgg	att	gga	ctt	aac	agt	ctg	agc	ttc	aac	agc	ggt	tgg	cag	tgg	979
Leu	Trp	Ile	Gly	Leu	Asn	Ser	Leu	Ser	Phe	Asn	Ser	Gly	Trp	Gln	Trp	
280								285					290			
agt	gac	cgc	agt	cct	ttc	cga	tat	ttg	aac	tgg	tta	cca	gga	agt	cca	1027
Ser	Asp	Arg	Ser	Pro	Phe	Arg	Tyr	Leu	Asn	Trp	Leu	Pro	Gly	Ser	Pro	
295								300					305			
tca	gct	gaa	cct	gga	aaa	agc	tgt	gtg	tca	cta	aat	cct	gga	aaa	aat	1075
Ser	Ala	Glu	Pro	Gly	Lys	Ser	Cys	Val	Ser	Leu	Asn	Pro	Gly	Lys	Asn	
310								315					320			
gct	aaa	tgg	gaa	aat	ctg	gaa	tgt	gtt	cag	aaa	ctg	ggc	tat	att	tgc	1123
Ala	Lys	Trp	Glu	Asn	Ieu	Glu	Cys	Val	Gln	Lys	Leu	Gly	Tyr	Ile	Cys	
325								330					335		340	
aaa	aag	ggc	aac	acc	act	tta	aat	tct	ttt	gtt	att	ccc	tca	gaa	agt	1171
Lys	Lys	Gly	Asn	Thr	Thr	Leu	Asn	Ser	Phe	Val	Ile	Pro	Ser	Glu	Ser	
345								350					355			
gat	gtg	cct	act	cac	tgt	cct	agt	cag	tgg	tgg	ccg	tat	gcc	ggt	cac	1219
Asp	Val	Pro	Thr	His	Cys	Pro	Ser	Gln	Trp	Trp	Pro	Tyr	Ala	Gly	His	
360								365					370			
tgt	tac	aag	att	cac	aga	gat	gag	aaa	aaa	atc	cag	agg	gat	gct	ctg	1267

Cys Tyr Lys Ile His Arg Asp Glu Lys Lys Ile Gln Arg Asp Ala Leu			
375	380	385	
acc acc tgc agg aag gaa ggc ggt gac ctc aca agt atc cac acc atc			1315
Thr Thr Cys Arg Lys Glu Gly Gly Asp Leu Thr Ser Ile His Thr Ile			
390	395	400	
gag gaa ttg gac ttt att atc tcc cag cta gga tat gag cca aat gac			1363
Glu Glu Leu Asp Phe Ile Ile Ser Gln Leu Gly Tyr Glu Pro Asn Asp			
405	410	415	420
gaa ttg tgg atc ggc tta aat gac att aag att caa atg tac ttt gag			1411
Glu Leu Trp Ile Gly Leu Asn Asp Ile Lys Ile Gln Met Tyr Phe Glu			
425	430	435	
tgg agt gat ggg acc cct gta acg ttt acc aaa tgg ctt cgt gga gaa			1459
Trp Ser Asp Gly Thr Pro Val Thr Phe Thr Lys Trp Leu Arg Gly Glu			
440	445	450	
cca agc cat gaa aac aac aga cag gag gat tgt gtg gtg atg aaa ggc			1507
Pro Ser His Glu Asn Asn Arg Gln Glu Asp Cys Val Val Met Lys Gly			
455	460	465	
aag gat ggg tac tgg gca gat cgg ggc tgt gag tgg cct ctt ggc tac			1555
Lys Asp Gly Tyr Trp Ala Asp Arg Gly Cys Glu Trp Pro Leu Gly Tyr			
470	475	480	
atc tgc aag atg aaa tca cga agc caa ggt cca gaa ata gtg gaa gtc			1603
Ile Cys Lys Met Lys Ser Arg Ser Gln Gly Pro Glu Ile Val Glu Val			
485	490	495	500
gaa aaa ggc tgc agg aaa ggc tgg aaa aaa cat cac ttt tac tgc tat			1651
Glu Lys Gly Cys Arg Lys Gly Trp Lys Lys His His Phe Tyr Cys Tyr			
505	510	515	
atg att gga cat acg ctt tca aca ttt gca gaa gca aac caa acc tgt			1699
Met Ile Gly His Thr Leu Ser Thr Phe Ala Glu Ala Asn Gln Thr Cys			
520	525	530	
aat aat gag aat gct tat tta aca act att gaa gac aga tat gaa caa			1747
Asn Asn Glu Asn Ala Tyr Leu Thr Thr Ile Glu Asp Arg Tyr Glu Gln			
535	540	545	
gcc ttc ctg act agt ttc gtt ggc tta agg cct gaa aaa tat ttc tgg			1795
Ala Phe Leu Thr Ser Phe Val Gly Leu Arg Pro Glu Lys Tyr Phe Trp			
550	555	560	
aca gga ctt tca gat ata caa acc aaa ggg act ttt cag tgg acc atc			1843
Thr Gly Leu Ser Asp Ile Gln Thr Lys Gly Thr Phe Gln Trp Thr Ile			
565	570	575	580
gag gaa gag gtt cggtt acc cac tgg aat tca gat atg cca ggg cga			1891
Glu Glu Glu Val Arg Phe Thr His Trp Asn Ser Asp Met Pro Gly Arg			
585	590	595	
aag cca ggg tgt gtt gcc atg aga acc ggg att gca ggg ggc tta tgg			1939
Lys Pro Gly Cys Val Ala Met Arg Thr Gly Ile Ala Gly Gly Leu Trp			
600	605	610	
gat gtt ttg aaa tgt gat gaa aag gca aaa ttt gtg tgc aag cac tgg			1987

Asp Val Leu Lys Cys Asp Glu Lys Ala Lys Phe Val Cys Lys His Trp			
615	620	625	
gca gaa gga gta acc cac cca ccg aag ccc acg acg act ccc gaa ccc			2035
Ala Glu Gly Val Thr His Pro Pro Lys Pro Thr Thr Pro Glu Pro			
630	635	640	
aaa tgt ccg gag gat tgg ggc gcc agc agt aga aca agc ttg tgt ttc			2083
Lys Cys Pro Glu Asp Trp Gly Ala Ser Ser Arg Thr Ser Leu Cys Phe			
645	650	655	660
aag ctg tat gca aaa gga aaa cat gag aag aaa acg tgg ttt gaa tct			2131
Lys Leu Tyr Ala Lys Gly Lys His Glu Lys Lys Thr Trp Phe Glu Ser			
665	670	675	
cga gat ttt tgt cga gct ctg ggt gga gac tta gct acg atc aat aac			2179
Arg Asp Phe Cys Arg Ala Leu Gly Gly Asp Leu Ala Ser Ile Asn Asn			
680	685	690	
aaa gag gaa cag caa aca ata tgg cga tta ata aca gct agt gga agc			2227
Lys Glu Glu Gln Gln Thr Ile Trp Arg Leu Ile Thr Ala Ser Gly Ser			
695	700	705	
tac cac aaa ctg ttt tgg ttg gga ttg aca tat gga agc cct tca gaa			2275
Tyr His Lys Leu Phe Trp Leu Gly Leu Thr Tyr Gly Ser Pro Ser Glu			
710	715	720	
ggt ttt act tgg agt gat ggt tct cct gtt tca tat gaa aac tgg gct			2323
Gly Phe Thr Trp Ser Asp Gly Ser Pro Val Ser Tyr Glu Asn Trp Ala			
725	730	735	740
tat gga gaa cct aat aat tat caa aat gtt gaa tac tgt ggt gag ctg			2371
Tyr Gly Glu Pro Asn Asn Tyr Gln Asn Val Glu Tyr Cys Gly Glu Leu			
745	750	755	
aaa ggt gac cct act atg tct tgg aat gat att aat tgt gaa cac ctt			2419
Lys Gly Asp Pro Thr Met Ser Trp Asn Asp Ile Asn Cys Glu His Leu			
760	765	770	
aac aac tgg att tgc cag ata caa aaa gga caa aca cca aaa cct gag			2467
Asn Asn Trp Ile Cys Gln Ile Gln Lys Gly Gln Thr Pro Lys Pro Glu			
775	780	785	
cca aca cca gct cct caa gac aat cca cca gtt act gaa gat ggg tgg			2515
Pro Thr Pro Ala Pro Gln Asp Asn Pro Pro Val Thr Glu Asp Gly Trp			
790	795	800	
gtt att tac aaa gac tac cag tat tat ttc agc aaa gag aag gaa acc			2563
Val Ile Tyr Lys Asp Tyr Gln Tyr Phe Ser Lys Glu Lys Glu Thr			
805	810	815	820
atg gac aat gcg cga gcg ttt tgc aag agg aat ttt ggt gat ctt gtt			2611
Met Asp Asn Ala Arg Ala Phe Cys Lys Arg Asn Phe Gly Asp Leu Val			
825	830	835	
tct att caa agt gaa agt gaa aag aag ttt cta tgg aaa tat gta aac			2659
Ser Ile Gln Ser Glu Ser Glu Lys Lys Phe Leu Trp Lys Tyr Val Asn			
840	845	850	
aga aat gat gca cag tct gca tat ttt att ggt tta ttg atc agc ttg			2707

Arg Asn Asp Ala Gln Ser Ala Tyr Phe Ile Gly Leu Leu Ile Ser Leu			
855	860	865	
gat aaa aag ttt gct tgg atg gat gga agc aaa gtg gat tac gtg tct			2755
Asp Lys Lys Phe Ala Trp Met Asp Gly Ser Lys Val Asp Tyr Val Ser			
870	875	880	
tgg gcc aca ggt gaa ccc aat ttt gca aat gaa gat gaa aac tgt gtg			2803
Trp Ala Thr Gly Glu Pro Asn Phe Ala Asn Glu Asp Glu Asn Cys Val			
885	890	895	900
acc atg tat tca aat tca ggg ttt tgg aat gac att aac tgt ggc tat			2851
Thr Met Tyr Ser Asn Ser Gly Phe Trp Asn Asp Ile Asn Cys Gly Tyr			
905	910	915	
cca aac gcc ttc att tgc cag cga cat aac agt agt atc aat gct acc			2899
Pro Asn Ala Phe Ile Cys Gln Arg His Asn Ser Ser Ile Asn Ala Thr			
920	925	930	
aca gtt atg cct acc atg ccc tcg gtc cca tca ggg tgc aag gaa ggt			2947
Thr Val Met Pro Thr Met Pro Ser Val Pro Ser Gly Cys Lys Glu Gly			
935	940	945	
tgg aat ttc tac agc aac aag tgt ttc aaa atc ttt gga ttt atg gaa			2995
Trp Asn Phe Tyr Ser Asn Lys Cys Phe Lys Ile Phe Gly Phe Met Glu			
950	955	960	
gaa gaa aga aaa aat tgg caa gag gca cga aaa gct tgt ata ggc ttt			3043
Glu Glu Arg Lys Asn Trp Gln Glu Ala Arg Lys Ala Cys Ile Gly Phe			
965	970	975	980
gga ggg aat ctg gtc tcc ata caa aat gaa aaa gag caa gca ttt ctt			3091
Gly Gly Asn Leu Val Ser Ile Gln Asn Glu Lys Glu Gln Ala Phe Leu			
985	990	995	
acc tat cac atg aag gac tcc act ttc agt gcc tgg act ggg ctg			3136
Thr Tyr His Met Lys Asp Ser Thr Phe Ser Ala Trp Thr Gly Leu			
1000	1005	1010	
aat gat gtc aat tca gaa cac acg ttc ctt tgg acg gat gga cga			3181
Asn Asp Val Asn Ser Glu His Thr Phe Leu Trp Thr Asp Gly Arg			
1015	1020	1025	
gga gtc cat tac aca aac tgg ggg aaa ggt tac cct ggt gga aga			3226
Gly Val His Tyr Thr Asn Trp Gly Lys Gly Tyr Pro Gly Gly Arg			
1030	1035	1040	
aga agc agt ctt tct tat gaa gat gct gac tgt gtt gtt att att			3271
Arg Ser Ser Leu Ser Tyr Glu Asp Ala Asp Cys Val Val Ile Ile			
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gga ggt gca tca aat gaa gca gga aaa tgg atg gat gat acc tgc			3316
Gly Gly Ala Ser Asn Glu Ala Gly Lys Trp Met Asp Asp Thr Cys			
1060	1065	1070	
gac agt aaa cga ggc tac ata tgc cag aca cga tcc gac cct tcc			3361
Asp Ser Lys Arg Gly Tyr Ile Cys Gln Thr Arg Ser Asp Pro Ser			
1075	1080	1085	
ttg act aat cct cca gca acg att caa aca gat ggc ttt gtt aaa			3406

Leu	Thr	Asn	Pro	Pro	Ala	Thr	Ile	Gln	Thr	Asp	Gly	Phe	Val	Lys	
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Tyr	Gly	Lys	Ser	Ser	Tyr	Ser	Leu	Met	Arg	Gln	Lys	Phe	Gln	Trp	
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His	Glu	Ala	Glu	Thr	Tyr	Cys	Lys	Leu	His	Asn	Ser	Leu	Ile	Ala	
1120							1125						1130		
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Ser	Ile	Leu	Asp	Pro	Tyr	Ser	Asn	Ala	Phe	Ala	Trp	Leu	Gln	Met	
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Glu	Thr	Ser	Asn	Glu	Arg	Val	Trp	Ile	Ala	Leu	Asn	Ser	Asn	Leu	
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act	gat	aat	caa	tac	act	tgg	act	gat	aag	tgg	agg	gtg	agg	tac	3631
Thr	Asp	Asn	Gln	Tyr	Thr	Trp	Thr	Asp	Lys	Trp	Arg	Val	Arg	Tyr	
1165							1170						1175		
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Thr	Asn	Trp	Ala	Ala	Asp	Glu	Pro	Lys	Leu	Lys	Ser	Ala	Cys	Val	
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Tyr	Leu	Asp	Leu	Asp	Gly	Tyr	Trp	Lys	Thr	Ala	His	Cys	Asn	Glu	
1195							1200						1205		
agt	ttt	tac	ttt	ctc	tgt	aaa	aga	tca	gat	gaa	atc	cct	gct	act	3766
Ser	Phe	Tyr	Phe	Leu	Cys	Lys	Arg	Ser	Asp	Glu	Ile	Pro	Ala	Thr	
1210							1215						1220		
gaa	ccc	cca	caa	ctg	cct	ggc	aga	tgc	ccg	gag	tca	gat	cac	aca	3811
Glu	Pro	Pro	Gln	Leu	Pro	Gly	Arg	Cys	Pro	Glu	Ser	Asp	His	Thr	
1225							1230						1235		
gca	tgg	att	cct	ttc	cat	ggt	cac	tgt	tac	tat	att	gag	tcc	tca	3856
Ala	Trp	Ile	Pro	Phe	His	Gly	His	Cys	Tyr	Tyr	Ile	Glu	Ser	Ser	
1240							1245						1250		
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Tyr	Thr	Arg	Asn	Trp	Gly	Gln	Ala	Ser	Leu	Glu	Cys	Leu	Arg	Met	
1255							1260						1265		
ggt	tcc	tct	ctg	gtt	tcc	att	gaa	agt	gct	gca	gaa	tcc	agt	ttt	3946
Gly	Ser	Ser	Leu	Val	Ser	Ile	Glu	Ser	Ala	Ala	Glu	Ser	Ser	Phe	
1270							1275						1280		
ctg	tca	tat	cg	gtt	gag	cca	ctt	aaa	agt	aaa	acc	aat	ttt	tgg	3991
Leu	Ser	Tyr	Arg	Val	Glu	Pro	Leu	Lys	Ser	Lys	Thr	Asn	Phe	Trp	
1285							1290						1295		
ata	gga	ttg	ttc	aga	aat	gtt	gaa	ggg	acg	tgg	ctg	tgg	ata	aat	4036
Ile	Gly	Leu	Phe	Arg	Asn	Val	Glu	Gly	Thr	Trp	Leu	Trp	Ile	Asn	
1300							1305						1310		
aac	agt	ccg	gtc	tcc	ttt	gtc	aac	tgg	aac	aca	gga	gat	ccc	tct	4081

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Lys Arg Cys Val Asp Ala Val Ser Pro Ser Ala Val Gln Thr Ala Ala
35 40 45

Cys Asn Gln Asp Ala Glu Ser Gln Lys Phe Arg Trp Val Ser Glu Ser
50 55 60

Gln Ile Met Ser Val Ala Phe Lys Leu Cys Leu Gly Val Pro Ser Lys
65 70 75 80

Thr Asp Trp Val Ala Ile Thr Leu Tyr Ala Cys Asp Ser Lys Ser Glu
85 90 95

Phe Gln Lys Trp Glu Cys Lys Asn Asp Thr Leu Leu Gly Ile Lys Gly
100 105 110

Glu Asp Leu Phe Phe Asn Tyr Gly Asn Arg Gln Glu Lys Asn Ile Met
115 120 125

Leu Tyr Lys Gly Ser Gly Leu Trp Ser Arg Trp Lys Ile Tyr Gly Thr
130 135 140

Thr Asp Asn Leu Cys Ser Arg Gly Tyr Glu Ala Met Tyr Thr Leu Leu
145 150 155 160

Gly Asn Ala Asn Gly Ala Thr Cys Ala Phe Pro Phe Lys Phe Glu Asn
165 170 175

Lys Trp Tyr Ala Asp Cys Thr Ser Ala Gly Arg Ser Asp Gly Trp Leu
180 185 190

Trp Cys Gly Thr Thr Asp Tyr Asp Thr Asp Lys Leu Phe Gly Tyr
195 200 205

Cys Pro Leu Lys Phe Glu Gly Ser Glu Ser Leu Trp Asn Lys Asp Pro
210 215 220

Leu Thr Ser Val Ser Tyr Gln Ile Asn Ser Lys Ser Ala Leu Thr Trp
225 230 235 240

His Gln Ala Arg Lys Ser Cys Gln Gln Asn Ala Glu Leu Leu Ser
245 250 255

Ile Thr Glu Ile His Glu Gln Thr Tyr Leu Thr Gly Leu Thr Ser Ser
260 265 270

Leu Thr Ser Gly Leu Trp Ile Gly Leu Asn Ser Leu Ser Phe Asn Ser
275 280 285

Gly Trp Gln Trp Ser Asp Arg Ser Pro Phe Arg Tyr Leu Asn Trp Leu
290 295 300

Pro Gly Ser Pro Ser Ala Glu Pro Gly Lys Ser Cys Val Ser Leu Asn
305 310 315 320

Pro Gly Lys Asn Ala Lys Trp Glu Asn Leu Glu Cys Val Gln Lys Leu
325 330 335

Gly Tyr Ile Cys Lys Lys Gly Asn Thr Thr Leu Asn Ser Phe Val Ile
340 345 350

Pro Ser Glu Ser Asp Val Pro Thr His Cys Pro Ser Gln Trp Trp Pro
355 360 365

Tyr Ala Gly His Cys Tyr Lys Ile His Arg Asp Glu Lys Lys Ile Gln
370 375 380

Arg Asp Ala Leu Thr Thr Cys Arg Lys Glu Gly Gly Asp Leu Thr Ser
385 390 395 400

Ile His Thr Ile Glu Glu Leu Asp Phe Ile Ile Ser Gln Leu Gly Tyr
405 410 415

Glu Pro Asn Asp Glu Leu Trp Ile Gly Leu Asn Asp Ile Lys Ile Gln
420 425 430

Met Tyr Phe Glu Trp Ser Asp Gly Thr Pro Val Thr Phe Thr Lys Trp
435 440 445

Leu Arg Gly Glu Pro Ser His Glu Asn Asn Arg Gln Glu Asp Cys Val
450 455 460

Val Met Lys Gly Lys Asp Gly Tyr Trp Ala Asp Arg Gly Cys Glu Trp
465 470 475 480

Pro Leu Gly Tyr Ile Cys Lys Met Lys Ser Arg Ser Gln Gly Pro Glu
485 490 495

Ile Val Glu Val Glu Lys Gly Cys Arg Lys Gly Trp Lys Lys His His
500 505 510

Phe Tyr Cys Tyr Met Ile Gly His Thr Leu Ser Thr Phe Ala Glu Ala
515 520 525

Asn Gln Thr Cys Asn Asn Glu Asn Ala Tyr Leu Thr Thr Ile Glu Asp
530 535 540

Arg Tyr Glu Gln Ala Phe Leu Thr Ser Phe Val Gly Leu Arg Pro Glu
545 550 555 560

Lys Tyr Phe Trp Thr Gly Leu Ser Asp Ile Gln Thr Lys Gly Thr Phe
565 570 575

Gln Trp Thr Ile Glu Glu Val Arg Phe Thr His Trp Asn Ser Asp
580 585 590

Met Pro Gly Arg Lys Pro Gly Cys Val Ala Met Arg Thr Gly Ile Ala
595 600 605

Gly Gly Leu Trp Asp Val Leu Lys Cys Asp Glu Lys Ala Lys Phe Val
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Cys Lys His Trp Ala Glu Gly Val Thr His Pro Pro Lys Pro Thr Thr
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Thr Pro Glu Pro Lys Cys Pro Glu Asp Trp Gly Ala Ser Ser Arg Thr
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Ser Leu Cys Phe Lys Leu Tyr Ala Lys Gly Lys His Glu Lys Lys Thr
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Trp Phe Glu Ser Arg Asp Phe Cys Arg Ala Leu Gly Gly Asp Leu Ala
675 680 685

Ser Ile Asn Asn Lys Glu Glu Gln Gln Thr Ile Trp Arg Leu Ile Thr
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Ala Ser Gly Ser Tyr His Lys Leu Phe Trp Leu Gly Leu Thr Tyr Gly
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Ser Pro Ser Glu Gly Phe Thr Trp Ser Asp Gly Ser Pro Val Ser Tyr
725 730 735

Glu Asn Trp Ala Tyr Gly Glu Pro Asn Asn Tyr Gln Asn Val Glu Tyr
740 745 750

Cys Gly Glu Leu Lys Gly Asp Pro Thr Met Ser Trp Asn Asp Ile Asn
755 760 765

Cys Glu His Leu Asn Asn Trp Ile Cys Gln Ile Gln Lys Gly Gln Thr
770 775 780

Pro Lys Pro Glu Pro Thr Pro Ala Pro Gln Asp Asn Pro Pro Val Thr
785 790 795 800

Glu Asp Gly Trp Val Ile Tyr Lys Asp Tyr Gln Tyr Tyr Phe Ser Lys
805 810 815

Glu Lys Glu Thr Met Asp Asn Ala Arg Ala Phe Cys Lys Arg Asn Phe
820 825 830

Gly Asp Leu Val Ser Ile Gln Ser Glu Ser Glu Lys Lys Phe Leu Trp
835 840 845

Lys Tyr Val Asn Arg Asn Asp Ala Gln Ser Ala Tyr Phe Ile Gly Leu
850 855 860

Leu Ile Ser Leu Asp Lys Lys Phe Ala Trp Met Asp Gly Ser Lys Val
865 870 875 880

Asp Tyr Val Ser Trp Ala Thr Gly Glu Pro Asn Phe Ala Asn Glu Asp
885 890 895

Glu Asn Cys Val Thr Met Tyr Ser Asn Ser Gly Phe Trp Asn Asp Ile
900 905 910

Asn Cys Gly Tyr Pro Asn Ala Phe Ile Cys Gln Arg His Asn Ser Ser
915 920 925

Ile Asn Ala Thr Thr Val Met Pro Thr Met Pro Ser Val Pro Ser Gly
930 935 940

Cys Lys Glu Gly Trp Asn Phe Tyr Ser Asn Lys Cys Phe Lys Ile Phe
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Gly Phe Met Glu Glu Glu Arg Lys Asn Trp Gln Glu Ala Arg Lys Ala
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Cys Ile Gly Phe Gly Gly Asn Leu Val Ser Ile Gln Asn Glu Lys Glu
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Gln Ala Phe Leu Thr Tyr His Met Lys Asp Ser Thr Phe Ser Ala Trp
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Thr Gly Leu Asn Asp Val Asn Ser Glu His Thr Phe Leu Trp Thr
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Asp Gly Arg Gly Val His Tyr Thr Asn Trp Gly Lys Gly Tyr Pro
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Gly Gly Arg Arg Ser Ser Leu Ser Tyr Glu Asp Ala Asp Cys Val
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Asp Thr Cys Asp Ser Lys Arg Gly Tyr Ile Cys Gln Thr Arg Ser
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Asp Pro Ser Leu Thr Asn Pro Pro Ala Thr Ile Gln Thr Asp Gly
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Phe Val Lys Tyr Gly Lys Ser Ser Tyr Ser Leu Met Arg Gln Lys
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Ala Cys Val Tyr Leu Asp Leu Asp Gly Tyr Trp Lys Thr Ala His
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Cys Asn Glu Ser Phe Tyr Phe Leu Cys Lys Arg Ser Asp Glu Ile
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Asp Pro Ser Gly Glu Arg Asn Asp Cys Val Ala Leu His Ala Ser
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Ser Gly Phe Trp Ser Asn Ile His Cys Ser Ser Tyr Lys Gly Tyr
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Ile Cys Lys Arg Pro Lys Ile Ile Asp Ala Lys Pro Thr His Glu
1355 1360 1365

Leu Leu Thr Thr Lys Ala Asp Thr Arg Lys Met Asp Pro Ser Lys
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Pro Ser Ser Asn Val Ala Gly Val Val Ile Ile Val Ile Leu Leu
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1400 1405 1410

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Pro Trp Asn Glu Pro Pro Val Ile Leu Ser Met Val Ile Leu Ser Leu 96
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Thr Phe Leu Leu Gly Leu Pro Gly Asn Gly Leu Val Leu Trp Val Ala 144

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Gly Leu Lys Met Gln Arg	Thr Val Asn Thr Ile Trp	Phe Leu His Leu	
50	55	60	
acc ttg gcg gac ctc ctc	tgc tcc ttg ccc ttc tcg	ctg gct	240
Thr Leu Ala Asp Leu Leu	Cys Cys Leu Ser Leu Pro Phe Ser Leu Ala		
65	70	75	80
cac ttg gct ctc cag gga	cag tgg ccc tac ggc agg ttc cta tgc aag	288	
His Leu Ala Leu Gln Gly	Gln Trp Pro Tyr Gly Arg Phe Leu Cys Lys		
85	90	95	
ctc atc ccc tcc atc att	gtc ctc aac atg ttt gcc agt gtc ttc ctg	336	
Leu Ile Pro Ser Ile Ile Val	Leu Asn Met Phe Ala Ser Val Phe Leu		
100	105	110	
ctt act gcc att agc ctg	gat cgc tgt ctt gtg gta ttc aag cca atc	384	
Leu Thr Ala Ile Ser Leu Asp Arg	Cys Leu Val Val Phe Lys Pro Ile		
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tgg tgt cag aat cat cgc	aat gta ggg atg gcc tgc tct atc tgt gga	432	
Trp Cys Gln Asn His Arg	Asn Val Gly Met Ala Cys Ser Ile Cys Gly		
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tgt atc tgg gtg gtc	ttt gtg atg tgc att cct gtg ttc gtg tac	480	
Cys Ile Trp Val Val Ala	Phe Val Met Cys Ile Pro Val Phe Val Tyr		
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cgg gaa atc ttc act aca	gac aac cat aat aga tgt ggc tac aaa ttt	528	
Arg Glu Ile Phe Thr Thr Asp Asn His Asn Arg Cys	Gly Tyr Lys Phe		
165	170	175	
ggt ctc tcc agc tca tta	gat tat cca gac ttt tat gga gat cca cta	576	
Gly Leu Ser Ser Leu Asp Tyr	Pro Asp Phe Tyr Gly Asp Pro Leu		
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gaa aac agg tct ctt gaa	aac att gtt cag ccg cct gga gaa atg aat	624	
Glu Asn Arg Ser Leu Glu Asn	Ile Val Gln Pro Pro Gly Glu Met Asn		
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gat agg tta gat cct tcc	tct ttc caa aca aat gat cat cct tgg aca	672	
Asp Arg Leu Asp Pro Ser	Ser Phe Gln Thr Asn Asp His Pro Trp Thr		
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gtc ccc act gtc ttc caa	cct caa aca ttt caa aga cct tct gca gat	720	
Val Pro Thr Val Phe Gln	Pro Gln Thr Phe Gln Arg Pro Ser Ala Asp		
225	230	235	240
tca ctc cct agg ggt	tct gct agg tta aca agt caa aat ctg tat tct	768	
Ser Leu Pro Arg Gly	Ser Ala Arg Leu Thr Ser Gln Asn Leu Tyr Ser		
245	250	255	
aat gta ttt aaa cct	gct gat gtg gtc tca cct aaa atc ccc agt ggg	816	
Asn Val Phe Lys Pro Ala	Asp Val Val Ser Pro Lys Ile Pro Ser Gly		
260	265	270	
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Phe Pro Ile Glu Asp His	Glu Thr Ser Pro Leu Asn Ser Asp Ala		

275	280	285	
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ttc tac gag tct gag cta cca caa ggt ttc cag gat tat tac aat tta Phe Tyr Glu Ser Glu Leu Pro Gln Gly Phe Gln Asp Tyr Tyr Asn Leu 305	310	315	960
ggc caa ttc aca gat gac gat caa gtg cca aca ccc ctc gtg gca ata Gly Gln Phe Thr Asp Asp Asp Gln Val Pro Thr Pro Leu Val Ala Ile 325	330	335	1008
acg atc act agg cta gtg gtg ggt ttc ctg ctg ccc tct gtt atc atg Thr Ile Thr Arg Leu Val Val Gly Phe Leu Leu Pro Ser Val Ile Met 340	345	350	1056
ata gcc tgt tac agc ttc att gtc ttc cga atg caa agg ggc cgc ttc Ile Ala Cys Tyr Ser Phe Ile Val Phe Arg Met Gln Arg Gly Arg Phe 355	360	365	1104
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gat cat gta tgc att gct cta gca tct gcc aat agt tgc ttt aat ccc Asp His Val Cys Ile Ala Leu Ala Ser Ala Asn Ser Cys Phe Asn Pro 420	425	430	1296
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210 215 220

Val Pro Thr Val Phe Gln Pro Gln Thr Phe Gln Arg Pro Ser Ala Asp
225 230 235 240

Ser Leu Pro Arg Gly Ser Ala Arg Leu Thr Ser Gln Asn Leu Tyr Ser
245 250 255

DRAFT PROTEIN SEQUENCE FROM SP2001

Asn Val Phe Lys Pro Ala Asp Val Val Ser Pro Lys Ile Pro Ser Gly
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Phe Pro Ile Glu Asp His Glu Thr Ser Pro Leu Asp Asn Ser Asp Ala
275 280 285

Phe Leu Ser Thr His Leu Lys Leu Phe Pro Ser Ala Ser Ser Asn Ser
290 295 300

Phe Tyr Glu Ser Glu Leu Pro Gln Gly Phe Gln Asp Tyr Tyr Asn Leu
305 310 315 320

Gly Gln Phe Thr Asp Asp Gln Val Pro Thr Pro Leu Val Ala Ile
325 330 335

Thr Ile Thr Arg Leu Val Val Gly Phe Leu Leu Pro Ser Val Ile Met
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Ile Ala Cys Tyr Ser Phe Ile Val Phe Arg Met Gln Arg Gly Arg Phe
355 360 365

Ala Lys Ser Gln Ser Lys Thr Phe Arg Val Ala Val Val Val Ala
370 375 380

Val Phe Leu Val Cys Trp Thr Pro Tyr His Ile Phe Gly Val Leu Ser
385 390 395 400

Leu Leu Thr Asp Pro Glu Thr Pro Leu Gly Lys Thr Leu Met Ser Trp
405 410 415

Asp His Val Cys Ile Ala Leu Ala Ser Ala Asn Ser Cys Phe Asn Pro
420 425 430

Phe Leu Tyr Ala Leu Leu Gly Lys Asp Phe Arg Lys Lys Ala Arg Gln
435 440 445

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Met	Ala	Gln	Ser	Leu	Ala	Leu	Ser	Leu	Ile	Leu	Val	Leu	Ala	Phe		
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Ile Asn Arg Val Leu Lys Lys Ile Ser Thr Pro Tyr Ieu Ile Leu Asn		
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Val Tyr Lys Val Ala Ala Met Asp Phe Ile Phe Lys Asp Asp Pro Ala	
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Glu Ser Ser Thr Lys Ser His Arg Leu Ile Ala His Leu Asp Asn Arg	
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Ser Lys Leu Asp Tyr Phe Phe Ile Ile Val Ile Ser Thr Leu Ser Leu
35 40 45

Phe Leu Phe Lys Met Phe Asp Ser Ala Ser Leu Ile Ile Leu Thr Ser
50 55 60

Phe Ile Ile Ile Met Tyr Phe Val Lys Ile Lys Trp Tyr Ser Ile Leu
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Leu Ile Met Thr Ser Gln Ile Ile Leu Tyr Cys Ala Asn Tyr Met Tyr
85 90 95

Ile Val Ile Tyr Ala Tyr Ile Thr Lys Ile Ser Asp Ser Ile Phe Val
100 105 110

Ile Phe Pro Ser Phe Phe Val Val Tyr Val Thr Ile Ser Ile Leu Phe
115 120 125

Ser Tyr Ile Ile Asn Arg Val Leu Lys Lys Ile Ser Thr Pro Tyr Leu
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145 150 155 160

Thr Phe Ser Leu Phe Phe Tyr Ser Gln Ile Asn Ser Asp Glu Ala
165 170 175

Lys Val Ile Arg Gln Tyr Ser Leu Phe Tyr Trp Tyr His Tyr Ile Leu
180 185 190

Ser Ile Leu Thr Leu Tyr Ser Gln Phe Leu Leu Lys Glu Met Lys Tyr
195 200 205

Lys Arg Asn Gln Glu Glu Ile Glu Thr Tyr Tyr Glu Tyr Thr Leu Lys
210 215 220

Ile Glu Ala Ile Asn Asn Glu Met Arg Lys Phe Arg His Asp Tyr Val
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Asn Ile Leu Thr Thr Leu Ser Glu Tyr Ile Arg Glu Asp Asp Met Pro
245 250 255

Gly Leu Arg Asp Tyr Phe Asn Lys Asn Ile Val Pro Met Lys Asp Asn
260 265 270

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Arg Glu Ile Lys Gly Leu Ile Thr Ala Lys Ile Leu Arg Ala Gln Glu
290 295 300

Met Asn Ile Pro Ile Ser Ile Glu Ile Pro Asp Glu Val Ser Ser Ile
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Asn Leu Asn Met Ile Asp Leu Ser Arg Ser Ile Gly Ile Ile Leu Asp
325 330 335

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340 345 350

Ala Phe Ile Glu Ser Glu Asn Ser Val Thr Phe Ile Val Met Asn Lys
355 360 365

Cys Ala Asp Asp Ile Pro Arg Ile His Glu Leu Phe Gln Glu Ser Phe
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Ser Thr Lys Gly Glu Gly Arg Gly Leu Gly Leu Ser Thr Leu Lys Glu
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Gly Phe Phe Tyr Ser Lys Ser
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35 40 45

Asn Met Asn Asp Ile Gly Cys Tyr Phe Leu Asp Ile Gln Leu Ser Thr
50 55 60

Asp Ile Asn Gly Ile Lys Leu Gly Ser Glu Ile Arg Lys His Asp Pro
65 70 75 80

Val Gly Asn Ile Ile Phe Val Thr Ser His Ser Glu Leu Thr Tyr Leu
85 90 95

Thr Phe Val Tyr Lys Val Ala Ala Met Asp Phe Ile Phe Lys Asp Asp
100 105 110

Pro Ala Glu Leu Arg Thr Arg Ile Ile Asp Cys Leu Glu Thr Ala His
115 120 125

Thr Arg Leu Gln Leu Leu Ser Lys Asp Asn Ser Val Glu Thr Ile Glu
130 135 140

Leu Lys Arg Gly Ser Asn Ser Val Tyr Val Gln Tyr Asp Asp Ile Met
145 150 155 160

Phe Phe Glu Ser Ser Thr Lys Ser His Arg Leu Ile Ala His Leu Asp
165 170 175

Asn Arg Gln Ile Glu Phe Tyr Gly Asn Leu Lys Glu Leu Ser Gln Leu
180 185 190

Asp Asp Arg Phe Phe Arg Cys His Asn Ser Phe Val Val Asn Arg His
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cttttttctg cttacttaa ccagacaatc acacaaaaga gtcgctagtg gaaaagccat	420
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75 80 85 90	
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205 210 215	
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Ala	Val	Lys	Thr	Pro	Val	Ile	Ser	Ieu	Phe	Gly	Ala	Thr	Asp	His	Val	
					270			275				280				
ttc	tgg	cgt	ccc	tgg	acc	gag	aat	att	att	caa	ttc	tgg	gcg	ggg	aat	1337
Phe	Trp	Arg	Pro	Trp	Thr	Glu	Asn	Ile	Ile	Gln	Phe	Trp	Ala	Gly	Asn	
					285			290				295				
tat	cag	aaa	atg	ccg	acc	cg	cat	gaa	ctt	gac	cgc	aac	aaa	aaa	tat	1385
Tyr	Gln	Lys	Met	Pro	Thr	Arg	His	Glu	Leu	Asp	Arg	Asn	Lys	Lys	Tyr	
					300			305				310				
ctt	tct	gtt	atc	cca	g	cg	g	g	atc	gcc	g	c	g	a	ctg	1433
Leu	Ser	Val	Ile	Pro	Ala	Glu	Asp	Val	Ile	Ala	Ala	Thr	Glu	Lys	Leu	
					315			320				325			330	
ttg	cca	gaa	gat	gcc	cct	tca	gct	gac	agg	aat	gca	caa	tta	tg	atc	1480
Leu	Pro	Glu	Asp	Ala	Pro	Ser	Ala	Asp	Arg	Asn	Ala	Gln	Leu		Ile	
					335			340				345				
gtg	g	cg	ttt	tgt	tta	tat	aaa	tat	ttt	cca	ttt	gg	ctt	caa	cg	1528
Val	Ala	Phe	Cys	Ieu	Tyr	Lys	Tyr	Phe	Phe	Gly	Gly	Leu	Gln	Arg		
					350			355				360				
gac	ttt	atg	cgc	att	gca	tca	aca	gtt	gcc	gca	cg	gg	cac	cat	gtt	1576
Asp	Phe	Met	Arg	Ile	Ala	Ser	Thr	Val	Ala	Ala	Arg	Gly	His	His	Val	
					365			370				375				
cg	gta	tat	aca	cag	tgc	tgg	gaa	ggc	gat	tgc	ccg	aaa	gca	ttt	gag	1624
Arg	Val	Tyr	Thr	Gln	Ser	Trp	Glu	Gly	Asp	Cys	Pro	Lys	Ala	Phe	Glu	
					380			385				390				
ctt	att	cag	gtg	cca	gtt	aag	tcc	cat	acc	aac	cat	gga	cgc	aat	gca	1672
Leu	Ile	Gln	Val	Pro	Val	Lys	Ser	His	Thr	Asn	His	Gly	Arg	Asn	Ala	
					395			400				405				
gaa	tat	tat	gcc	tgg	gta	caa	aat	cat	ctc	aaa	gag	cat	ccc	gca	gat	1720
Glu	Tyr	Tyr	Ala	Trp	Val	Gln	Asn	His	Leu	Lys	Glu	His	Pro	Ala	Asp	
					410			415				420			425	
cg	gtt	gtt	ggg	ttt	aat	aag	atg	cct	ggc	ctg	gat	gtt	tat	ttt	gcc	1768
Arg	Val	Val	Gly	Phe	Asn	Lys	Met	Pro	Gly	Leu	Asp	Val	Tyr	Phe	Ala	
					430			435				440				
gct	gat	gtt	tgt	tac	gcc	gag	aaa	gtt	g	ca	gaa	aaa	gg	ttt	tta	1816
Ala	Asp	Val	Cys	Tyr	Ala	Glu	Lys	Val	Ala	Gln	Glu	Lys	Gly	Phe	Leu	
					445			450				455				
tat	cgt	tta	aca	tca	cga	tat	cgc	cat	tat	gcc	gca	ttt	gag	cga	cg	1864

Tyr Arg Leu Thr Ser Arg Tyr Arg His Tyr Ala Ala Phe Glu Arg Ala			
460	465	470	
act ttc gag cag ggt aaa tcg acg aaa ctt atg atg ctg acc gat aag			1912
Thr Phe Glu Gln Gly Lys Ser Thr Lys Leu Met Met Leu Thr Asp Lys			
475	480	485	
caa atc gcc gat ttc cag aag cat tat caa act gaa cct gaa cgt ttt			1960
Gln Ile Ala Asp Phe Gln Lys His Tyr Gln Thr Glu Pro Glu Arg Phe			
490	495	500	505
caa att ctt cct ccc ggt att tat ccg gac aga aaa tac agt gag caa			2008
Gln Ile Leu Pro Pro Gly Ile Tyr Pro Asp Arg Lys Tyr Ser Glu Gln			
510	515	520	
atc cca aac agc cgt gaa att tat cgc cag aaa aat ggc ata aaa gag			2056
Ile Pro Asn Ser Arg Glu Ile Tyr Arg Gln Lys Asn Gly Ile Lys Glu			
525	530	535	
caa caa aac tta tta ctg cag gtt gga tca gat ttt ggc cgt aaa ggt			2104
Gln Gln Asn Leu Leu Gln Val Gly Ser Asp Phe Gly Arg Lys Gly			
540	545	550	
gta gat cgc tca att gaa gct ttg gca tcg tta ccg gaa tca tta cgt			2152
Val Asp Arg Ser Ile Glu Ala Leu Ala Ser Leu Pro Glu Ser Leu Arg			
555	560	565	
cac aat acg ctt tta ttt gtt ggt cag gat aag ccg cga aaa ttt			2200
His Asn Thr Leu Leu Phe Val Val Gly Gln Asp Lys Pro Arg Lys Phe			
570	575	580	585
gaa gcg ctg gca gaa aaa ctc ggc gtg cgg agc aat gtg cat ttc ttc			2248
Glu Ala Leu Ala Glu Lys Leu Gly Val Arg Ser Asn Val His Phe Phe			
590	595	600	
tcc ggt cgc aat gat gtg tca gaa tta atg gca gcc gct gat tta tta			2296
Ser Gly Arg Asn Asp Val Ser Glu Leu Met Ala Ala Asp Leu Leu			
605	610	615	
ctg cat ccc gct tat cag gaa gcc gcg ggt atc gtt ctt cta gaa gcg			2344
Leu His Pro Ala Tyr Gln Glu Ala Ala Gly Ile Val Leu Leu Glu Ala			
620	625	630	
atc act gct ggg tta cct gtt tta aca aca gcg gta tgt ggg tac gcg			2392
Ile Thr Ala Gly Leu Pro Val Leu Thr Thr Ala Val Cys Gly Tyr Ala			
635	640	645	
cat tat att gcg gat gcc aat tgt gga acg gtc atc gct gaa cct ttc			2440
His Tyr Ile Ala Asp Ala Asn Cys Gly Thr Val Ile Ala Glu Pro Phe			
650	655	660	665
tct cag gaa caa tta aat gaa gtt tta cgt aaa gcg tta act cag tcg			2488
Ser Gln Glu Gln Leu Asn Glu Val Leu Arg Lys Ala Leu Thr Gln Ser			
670	675	680	
cca ttg cga atg gcc tgg gcg gag aat gct cgc cat tat gcc gat act			2536
Pro Leu Arg Met Ala Trp Ala Glu Asn Ala Arg His Tyr Ala Asp Thr			
685	690	695	
cag gat ttg tat agc ttg cca gaa aaa gcc gcg gat atc att aca ggt			2584

2143 2245 22 2301 02 2302 2303 2304

Gln Asp Leu Tyr Ser Leu Pro Glu Lys Ala Ala Asp Ile Ile Thr Gly	
700 705 710	
ggt tta g atg gtt gaa tta aaa gag ccg ctt gcc aca ctt tgg cgt ggt	2633
Gly Leu Met Val Glu Leu Lys Glu Pro Leu Ala Thr Leu Trp Arg Gly	
715 720 725	
aaa gat gct ttt gca gag gtc aaa aaa ctg aac ggc gag gtc ttt cgt	2681
Lys Asp Ala Phe Ala Glu Val Lys Lys Leu Asn Gly Glu Val Phe Arg	
730 735 740 745	
gaa ctg gag act cgt cgt aca tta cgc ttt gaa ctg tcc ggg aaa agc	2729
Glu Leu Glu Thr Arg Arg Thr Leu Arg Phe Glu Leu Ser Gly Lys Ser	
750 755 760	
tat ttt ctt aaa tgg cac aag ggg acg aca tta aaa gag att ata aaa	2777
Tyr Phe Leu Lys Trp His Lys Gly Thr Thr Leu Lys Glu Ile Ile Lys	
765 770 775	
aat cta ctc tca ttg cgg atg ccc gtt ttg ggc gca gac aga gag tgg	2825
Asn Leu Leu Ser Leu Arg Met Pro Val Leu Gly Ala Asp Arg Glu Trp	
780 785 790	
cac gct att cat cgc ctg agt gat gtt ggc gtt gat aca atg aag ggc	2873
His Ala Ile His Arg Leu Ser Asp Val Gly Val Asp Thr Met Lys Gly	
795 800 805	
att ggg ttt ggc gaa aaa ggg tta aat cca tta act cgc gca tca ttt	2921
Ile Gly Phe Gly Glu Lys Gly Leu Asn Pro Leu Thr Arg Ala Ser Phe	
810 815 820 825	
att att acc gaa gat ctc act ccc aca att agc ctt gaa gat tat tgt	2969
Ile Ile Thr Glu Asp Leu Thr Pro Thr Ile Ser Leu Glu Asp Tyr Cys	
830 835 840	
gcc gat tgg gca gtc aac ccg cct gat ata cgt gtt aag cgt atg ctg	3017
Ala Asp Trp Ala Val Asn Pro Pro Asp Ile Arg Val Lys Arg Met Leu	
845 850 855	
atc gca cgt gta gca act atg gtg cgt aaa atg cat act gca ggg ata	3065
Ile Ala Arg Val Ala Thr Met Val Arg Lys Met His Thr Ala Gly Ile	
860 865 870	
aat cac cgc gac tgt tac att tgc cac ttt ttg ctt cat ttg cca ttt	3113
Asn His Arg Asp Cys Tyr Ile Cys His Phe Leu Leu His Leu Pro Phe	
875 880 885	
act ggc cgg gaa gat gaa tta aaa att tca gtt atc gat ctg cat cgg	3161
Thr Gly Arg Glu Asp Glu Leu Lys Ile Ser Val Ile Asp Leu His Arg	
890 895 900 905	
gca cag ata cgt gca aaa gta ccg cgc cgc tgg cgc gat aaa gac ctg	3209
Ala Gln Ile Arg Ala Lys Val Pro Arg Arg Trp Arg Asp Lys Asp Leu	
910 915 920	
att ggt tta tat ttc tca tca atg aat att ggc ctg acg caa aga gat	3257
Ile Gly Leu Tyr Phe Ser Ser Met Asn Ile Gly Leu Thr Gln Arg Asp	
925 930 935	
atc tgg cga ttt atg aag gtt tat ttt ggg atg cct tta cgc aaa ata	3305

Ile Trp Arg Phe Met Lys Val Tyr Phe Gly Met Pro Leu Arg Lys Ile		940	945	950	
ttg tct ctt gaa cag aat tta ttg aac atg gca agc gtt aag gcc gag		955	960	965	3353
Leu Ser Leu Glu Gln Asn Leu Leu Asn Met Ala Ser Val Lys Ala Glu					
cgt att aaa gag cga aca caa cgc aaa gga tta taaaaatatt tattagtatg		970	975	980	3406
Arg Ile Lys Glu Arg Thr Gln Arg Lys Gly Leu					
tactggaaact aactttatt atg act att tat ttt ata aat tgg gtt gca gat					3458
Met Thr Ile Tyr Phe Ile Asn Trp Val Ala Asp					
985	990				
tat gaa tta aaa atg att cag tac ctg aaa aaa aag tac aag ata aaa		995	1000	1005	3506
Tyr Glu Leu Lys Met Ile Gln Tyr Leu Lys Lys Lys Tyr Lys Ile Lys					
aat ata aca aca cca aaa aaa tat aac tgg att aat aaa aaa ata		1010	1015	1020	3551
Asn Ile Thr Thr Pro Lys Lys Tyr Asn Trp Ile Asn Lys Lys Ile					
tca aaa ata ggg atg gat aat gca tgg ctg ggg cga tta ttc atc		1025	1030	1035	3596
Ser Lys Ile Gly Met Asp Asn Ala Trp Leu Gly Arg Leu Phe Ile					
aag cat tac ctc aat gat att aaa aaa gat gac ata att atc att		1040	1045	1050	3641
Lys His Tyr Leu Asn Asp Ile Lys Lys Asp Asp Ile Ile Ile Ile					
aat gac agt gtt gtt aat aaa ggt atc aat aaa caa ata tta aaa		1055	1060	1065	3686
Asn Asp Ser Val Val Asn Lys Gly Ile Asn Lys Gln Ile Leu Lys					
aat att aac tgt cat aaa gtt ttg ctt cta aga aat act gtt ggc		1070	1075	1080	3731
Asn Ile Asn Cys His Lys Val Leu Leu Leu Arg Asn Thr Val Gly					
gaa gat ttt att ctt gat aac gcg aat tat ttc gat att ata tat		1085	1090	1095	3776
Glu Asp Phe Ile Leu Asp Asn Ala Asn Tyr Phe Asp Ile Ile Tyr					
gat ttt gag cat aga ttt ata ggg aat gaa aag atc aag gca ata		1100	1105	1110	3821
Asp Phe Glu His Arg Phe Ile Gly Asn Glu Lys Ile Lys Ala Ile					
gaa caa ttt ttt cct ata gga atg gat gaa att aga aat tat agt		1115	1120	1125	3866
Glu Gln Phe Phe Pro Ile Gly Met Asp Glu Ile Arg Asn Tyr Ser					
tta tct gac aaa aat aac agc cag cca ata tgt ttt ttc ctt ggt		1130	1135	1140	3911
Leu Ser Asp Lys Asn Asn Ser Gln Pro Ile Cys Phe Phe Leu Gly					
cgt gat aaa ggg cgt ctt caa ata att aat gag tta gcc gag aga		1145	1150	1155	3956
Arg Asp Lys Gly Arg Leu Gln Ile Ile Asn Glu Leu Ala Glu Arg					
tta aca aca cta gga tgt aag cta gat ttt aat gtt gtc aaa gat					4001

Leu	Thr	Thr	Leu	Gly	Cys	Lys	Leu	Asp	Phe	Asn	Val	Val	Lys	Asp	
1160							1165						1170		
aag	aca	tca	tct	acg	act	tca	aag	tat	ttg	att	gaa	aaa	caa	ata	4046
Lys	Thr	Ser	Ser	Thr	Thr	Ser	Lys	Tyr	Leu	Ile	Glu	Lys	Gln	Ile	
1175							1180						1185		
tct	tat	gaa	gag	aat	att	aga	aga	aca	tta	aat	gct	aat	ata	att	4091
Ser	Tyr	Glu	Glu	Asn	Ile	Arg	Arg	Thr	Leu	Asn	Ala	Asn	Ile	Ile	
1190							1195						1200		
gtt	gat	ata	acc	aaa	gaa	aac	caa	tct	ggc	tgg	act	ctt	cgt	ata	4136
Val	Asp	Ile	Thr	Lys	Glu	Asn	Gln	Ser	Gly	Trp	Thr	Leu	Arg	Ile	
1205							1210						1215		
ctt	gag	gca	cta	ttt	ttc	aat	aaa	aaa	tta	att	act	aat	aat	ata	4181
Leu	Glu	Ala	Leu	Phe	Phe	Asn	Lys	Lys	Leu	Ile	Thr	Asn	Asn	Ile	
1220							1225						1230		
aat	gtt	ttt	ggt	tca	gaa	atc	tat	agt	gaa	tct	cgc	ttt	ttt	ata	4226
Asn	Val	Phe	Gly	Ser	Glu	Ile	Tyr	Ser	Glu	Ser	Arg	Phe	Phe	Ile	
1235							1240						1245		
ata	ggt	cat	gat	gat	tgg	gat	aag	tta	gag	tat	ttt	att	aac	tca	4271
Ile	Gly	His	Asp	Asp	Trp	Asp	Lys	Leu	Glu	Tyr	Phe	Ile	Asn	Ser	
1250							1255						1260		
tct	gtt	aaa	cca	atg	gat	tat	gat	agt	tta	tat	aaa	ttc	agt	cca	4316
Ser	Val	Lys	Pro	Met	Asp	Tyr	Asp	Ser	Leu	Tyr	Lys	Phe	Ser	Pro	
1265							1270						1275		
gat	aaa	atg	atg	tca	acg	att	gtt	tct	gat	ttt	ata	gac	aaa	taa	4361
Asp	Lys	Met	Met	Ser	Thr	Ile	Val	Ser	Asp	Phe	Ile	Asp	Lys		
1280							1285						1290		
aaccgttaaa	aca	gtg	agt	ttt	act	caa	tta	atg	aga	gtt	tct	atg	aaa		4410
						Val	Ser	Phe	Thr	Gln	Leu	Met	Arg	Val	
														Ser	
														Met	
														Lys	
ata	gcg	ttt	atc	ggc	gaa	gct	gtt	tct	gga	ttt	ggc	ggc	atg	gaa	4455
Ile	Ala	Phe	Ile	Gly	Glu	Ala	Val	Ser	Gly	Phe	Gly	Gly	Met	Glu	
1305							1310						1315		
act	gtc	atc	cgt	gat	gtt	att	act	acc	ttc	agg	caa	caa	cat	atc	4500
Thr	Val	Ile	Arg	Asp	Val	Ile	Thr	Thr	Phe	Arg	Gln	Gln	His	Ile	
1320							1325						1330		
caa	agt	gaa	atg	ttt	ttc	ttt	tgt	cgt	aat	gac	aaa	atg	gat	aag	4545
Gln	Ser	Glu	Met	Phe	Phe	Phe	Cys	Arg	Asn	Asp	Lys	Met	Asp	Lys	
1335							1340						1345		
gga	tgg	ctg	gaa	ggt	att	aaa	tac	tca	tgt	tca	ttt	tcc	aat	att	4590
Gly	Trp	Leu	Glu	Gly	Ile	Lys	Tyr	Ser	Cys	Ser	Phe	Ser	Asn	Ile	
1350							1355						1360		
cgt	tta	ggt	ttt	ttg	cgt	cgg	gcg	aaa	cat	att	cat	gct	cta	agt	4635
Arg	Leu	Gly	Phe	Leu	Arg	Arg	Ala	Lys	His	Ile	His	Ala	Leu	Ser	
1365							1370						1375		
aaa	tgg	ctt	cag	gag	tac	caa	cca	gat	atc	gtt	att	tgt	att	gat	4680

Lys	Trp	Leu	Gln	Glu	Tyr	Gln	Pro	Asp	Ile	Val	Ile	Cys	Ile	Asp	
1380						1385						1390			
gtg	atc	tcc	tgc	ctg	ttt	gcc	gca	aaa	gca	cgt	aaa	aaa	tca	gga	4725
Val	Ile	Ser	Cys	Leu	Phe	Ala	Ala	Lys	Ala	Arg	Lys	Lys	Ser	Gly	
1395						1400					1405				
att	gat	atg	cca	gta	ttt	tca	tgg	cca	cat	ttt	tct	tta	gat	cac	4770
Ile	Asp	Met	Pro	Val	Phe	Ser	Trp	Pro	His	Phe	Ser	Leu	Asp	His	
1410						1415					1420				
aaa	aaa	cat	gct	gaa	tat	atc	acc	tgt	gcc	gac	tat	cat	tta	gca	4815
Lys	Lys	His	Ala	Glu	Tyr	Ile	Thr	Cys	Ala	Asp	Tyr	His	Leu	Ala	
1425						1430					1435				
atc	agc	tct	ggc	att	aaa	cag	caa	atg	att	aat	cga	ggt	gta	gca	4860
Ile	Ser	Ser	Gly	Ile	Lys	Gln	Gln	Met	Ile	Asn	Arg	Gly	Val	Ala	
1440						1445					1450				
gaa	tcg	acg	ata	aat	gtt	att	ttt	aat	ccc	gtc	gaa	act	aaa	gac	4905
Glu	Ser	Thr	Ile	Asn	Val	Ile	Phe	Asn	Pro	Val	Glu	Thr	Lys	Asp	
1455						1460					1465				
tca	gtc	att	ccc	gcg	ccc	gag	gaa	ggt	gaa	acg	gca	acg	ttt	att	4950
Ser	Val	Ile	Pro	Ala	Pro	Glu	Glu	Gly	Glu	Thr	Ala	Thr	Phe	Ile	
1470						1475					1480				
tat	gtt	ggg	cgt	atg	aaa	ttt	gaa	ggc	cag	aaa	aga	gtt	aaa	gac	4995
Tyr	Val	Gly	Arg	Met	Lys	Phe	Glu	Gly	Gln	Lys	Arg	Val	Lys	Asp	
1485						1490					1495				
ctg	ctt	gat	ggc	tta	tca	caa	gcg	aaa	ggt	aac	tgg	aaa	ctc	cat	5040
Leu	Leu	Asp	Gly	Leu	Ser	Gln	Ala	Lys	Gly	Asn	Trp	Lys	Leu	His	
1500						1505					1510				
gta	ttg	ggt	gat	ggc	tcc	gat	ttc	gaa	aaa	tgc	cag	gct	tat	ggt	5085
Val	Leu	Gly	Asp	Gly	Ser	Asp	Phe	Glu	Lys	Cys	Gln	Ala	Tyr	Gly	
1515						1520					1525				
aga	gaa	tta	aat	att	gat	gat	cga	att	gtc	tgg	tat	ggt	tgg	caa	5130
Arg	Glu	Leu	Asn	Ile	Asp	Asp	Arg	Ile	Val	Trp	Tyr	Gly	Trp	Gln	
1530						1535					1540				
caa	tat	ccc	tgg	gaa	ttg	gtc	cag	caa	gat	att	gaa	aaa	gtg	agt	5175
Gln	Tyr	Pro	Trp	Glu	Leu	Val	Gln	Gln	Asp	Ile	Glu	Lys	Val	Ser	
1545						1550					1555				
gcg	tta	ttg	ctc	acg	tca	tct	ttt	gaa	ggt	ttc	cca	atg	acc	cta	5220
Ala	Leu	Leu	Leu	Thr	Ser	Ser	Phe	Glu	Gly	Phe	Pro	Met	Thr	Leu	
1560						1565					1570				
ctt	gaa	gcc	ttg	tcg	tgg	ggg	att	cct	tgt	atc	agt	gcc	gat	tgt	5265
Leu	Glu	Ala	Leu	Ser	Trp	Gly	Ile	Pro	Cys	Ile	Ser	Ala	Asp	Cys	
1575						1580					1585				
gtc	tcc	ggg	cct	gct	gac	att	att	caa	cct	gat	gtc	aat	ggc	cat	5310
Val	Ser	Gly	Pro	Ala	Asp	Ile	Ile	Gln	Pro	Asp	Val	Asn	Gly	His	
1590						1595					1600				
ctg	tat	caa	ccg	gga	gat	att	gct	ggg	ttt	gta	act	ctt	cta	aat	5355

Leu	Tyr	Gln	Pro	Gly	Asp	Ile	Ala	Gly	Phe	Val	Thr	Leu	Leu	Asn	
1605						1610					1615				
aaa	tat	ata	gca	ggt	gaa	att	cat	atc	gaa	cat	gaa	aaa	att	cct	5400
Lys	Tyr	Ile	Ala	Gly	Glu	Ile	His	Ile	Glu	His	Glu	Lys	Ile	Pro	
1620						1625					1630				
gcg	tcg	atc	gat	gaa	ttt	tac	caa	tcg	aag	tat	tac	gat	aga	tta	5445
Ala	Ser	Ile	Asp	Glu	Phe	Tyr	Gln	Ser	Lys	Tyr	Tyr	Asp	Arg	Leu	
1635						1640					1645				
cat	aag	gta	att	att	tct	gct	att	tcc	cgg	agg	aaa	ta	atg	cag	5492
His	Lys	Val	Ile	Ile	Ser	Ala	Ile	Ser	Arg	Arg	Lys	Met	Gln	Gln	
1650						1655					1660				
gtg	ttt	ttc	cag	gaa	act	gag	ttt	ctt	aat	tca	gtt	att	gat	tat	5537
Val	Phe	Phe	Gln	Glu	Thr	Glu	Phe	Leu	Asn	Ser	Val	Ile	Asp	Tyr	
1665						1670					1675				
gat	cat	aaa	gta	gaa	aca	gaa	aat	ctt	tgt	ctg	gac	atc	gct	tat	5582
Asp	His	Lys	Val	Glu	Thr	Glu	Asn	Leu	Cys	Leu	Asp	Ile	Ala	Tyr	
1680						1685					1690				
gga	act	gac	aaa	aac	ttt	cta	ttt	ggg	tgc	gga	att	tcg	att	gct	5627
Gly	Thr	Asp	Lys	Asn	Phe	Leu	Phe	Gly	Cys	Gly	Ile	Ser	Ile	Ala	
1695						1700					1705				
tca	ata	tta	aaa	tat	aat	gaa	gga	agt	cga	ttg	tgt	ttc	cat	att	5672
Ser	Ile	Leu	Lys	Tyr	Asn	Glu	Gly	Ser	Arg	Leu	Cys	Phe	His	Ile	
1710						1715					1720				
ttt	act	gat	tat	ttt	ggt	gat	gat	gat	cgt	aag	tat	ttt	gat	gcc	5717
Phe	Thr	Asp	Tyr	Phe	Gly	Asp	Asp	Asp	Arg	Lys	Tyr	Phe	Asp	Ala	
1725						1730					1735				
ctg	gcg	ttg	cag	tat	aaa	acc	aga	att	aaa	ata	tat	ctg	att	aat	5762
Leu	Ala	Leu	Gln	Tyr	Lys	Thr	Arg	Ile	Lys	Ile	Tyr	Leu	Ile	Asn	
1740						1745					1750				
ggt	gat	cga	ctg	cgc	tca	ttg	cct	agc	act	aag	aat	tgg	act	cat	5807
Gly	Asp	Arg	Leu	Arg	Ser	Leu	Pro	Ser	Thr	Lys	Asn	Trp	Thr	His	
1755						1760					1765				
gca	ata	tat	ttt	cgt	ttt	gtt	att	gca	gat	tac	ttt	att	aat	aag	5852
Ala	Ile	Tyr	Phe	Arg	Phe	Val	Ile	Ala	Asp	Tyr	Phe	Ile	Asn	Lys	
1770						1775					1780				
gcg	cct	aaa	gtc	ctt	tat	ctg	gat	gca	gat	atc	att	tgt	cag	ggg	5897
Ala	Pro	Lys	Val	Leu	Tyr	Leu	Asp	Ala	Asp	Ile	Ile	Cys	Gln	Gly	
1785						1790					1795				
act	att	gag	cca	cta	att	aat	ttc	tca	ttt	cct	gac	gat	aaa	gtc	5942
Thr	Ile	Glu	Pro	Leu	Ile	Asn	Phe	Ser	Phe	Pro	Asp	Asp	Lys	Val	
1800						1805					1810				
gca	atg	gtt	gtt	aca	gaa	ggg	caa	gct	gac	tgg	tgg	gaa	aaa	cgc	5987
Ala	Met	Val	Val	Thr	Glu	Gly	Gln	Ala	Asp	Trp	Trp	Glu	Lys	Arg	
1815						1820					1825				
gcc	cat	tcg	tta	ggg	gtt	gct	gca	att	gct	aaa	ggg	tac	ttt	aac	6032

Ala	His	Ser	Leu	Gly	Val	Ala	Gly	Ile	Ala	Lys	Gly	Tyr	Phe	Asn	
1830						1835					1840				
tcc	ggt	ttt	tta	ttg	att	aat	act	gcc	caa	tgg	gcg	gct	cag	cag	6077
Ser	Gly	Phe	Leu	Leu	Ile	Asn	Thr	Ala	Gln	Trp	Ala	Ala	Gln	Gln	
1845						1850					1855				
gtt	tct	gca	cga	gct	att	gca	atg	cta	aat	gag	cca	gaa	ata	atc	6122
Val	Ser	Ala	Arg	Ala	Ile	Ala	Met	Leu	Asn	Glu	Pro	Glu	Ile	Ile	
1860						1865					1870				
aaa	aaa	ata	aca	cat	cct	gat	cag	gat	gtg	tta	aat	atg	ttg	ctg	6167
Lys	Lys	Ile	Thr	His	Pro	Asp	Gln	Asp	Val	Leu	Asn	Met	Leu	Leu	
1875						1880					1885				
gcg	gat	aaa	ctt	att	ttc	gct	gat	att	aaa	tat	aac	acc	cag	tcc	6212
Ala	Asp	Lys	Leu	Ile	Phe	Ala	Asp	Ile	Lys	Tyr	Asn	Thr	Gln	Phe	
1890						1895					1900				
agc	tta	aat	tat	caa	ctc	aaa	gaa	agc	ttt	ata	aac	cca	gta	acc	6257
Ser	Leu	Asn	Tyr	Gln	Leu	Lys	Glu	Ser	Phe	Ile	Asn	Pro	Val	Thr	
1905						1910					1915				
aac	gat	act	att	ttt	atc	cat	tat	atc	ggg	cca	acc	aag	ccc	tgg	6302
Asn	Asp	Thr	Ile	Phe	Ile	His	Tyr	Ile	Gly	Pro	Thr	Lys	Pro	Trp	
1920						1925					1930				
cat	gat	tgg	gcc	tgg	gat	tat	cct	gta	tca	caa	gcc	ttt	atg	gag	6347
His	Asp	Trp	Ala	Trp	Asp	Tyr	Pro	Val	Ser	Gln	Ala	Phe	Met	Glu	
1935						1940					1945				
gca	aaa	aat	gct	tcg	cca	tgg	aag	aat	acg	gcg	ttg	ctg	aaa	ccg	6392
Ala	Lys	Asn	Ala	Ser	Pro	Trp	Lys	Asn	Thr	Ala	Leu	Leu	Lys	Pro	
1950						1955					1960				
aac	aat	agc	aat	caa	tta	aga	tat	agc	gca	aaa	cat	atg	ctt	aaa	6437
Asn	Asn	Ser	Asn	Gln	Leu	Arg	Tyr	Ser	Ala	Lys	His	Met	Leu	Lys	
1965						1970					1975				
aag	cat	aga	tat	cta	aaa	gga	ttt	agc	aac	tat	ctt	ttt	tat	ttt	6482
Lys	His	Arg	Tyr	Leu	Lys	Gly	Phe	Ser	Asn	Tyr	Leu	Phe	Tyr	Phe	
1980						1985					1990				
att	gaa	aag	ata	aag	cat	taa	aactggaaa	ctataaagta	atgatataag						6533
Ile	Glu	Lys	Ile	Lys	His										
1995															
ggtagcatt	gtg	gac	tca	ttt	cct	gcc	ata	gag	ata	gat	aaa	gtt	aaa		6581
							Val	Asp	Ser	Phe	Pro	Ala	Ile	Glu	
												2005		2010	
gcc	tgg	gat	ttt	cg	cta	gct	aat	ata	aat	act	tct	gaa	tgt	tta	6626
Ala	Trp	Asp	Phe	Arg	Leu	Ala	Asn	Ile	Asn	Thr	Ser	Glu	Cys	Leu	
2015								2020					2025		
aat	gtt	gcc	tat	ggt	gtc	gat	gct	aat	tat	ctt	gat	ggt	gta	ggt	6671
Asn	Val	Ala	Tyr	Gly	Val	Asp	Ala	Asn	Tyr	Leu	Asp	Gly	Val	Gly	
2030								2035					2040		
gtt	tcc	atc	aca	tca	att	gtc	cta	aat	aat	cga	cat	att	aat	ctt	6716

Val	Ser	Ile	Thr	Ser	Ile	Val	Leu	Asn	Asn	Arg	His	Ile	Asn	Leu	
2045						2050						2055			
gat	ttt	tat	att	att	gct	gat	gtt	tat	aat	gat	ggt	ttt	ttt	caa	6761
Asp	Phe	Tyr	Ile	Ile	Ala	Asp	Val	Tyr	Asn	Asp	Gly	Phe	Phe	Gln	
2060						2065						2070			
aaa	att	gca	aag	ctt	gca	gag	caa	aac	caa	tta	aga	atc	acg	tta	6806
Lys	Ile	Ala	Lys	Leu	Ala	Glu	Gln	Asn	Gln	Leu	Arg	Ile	Thr	Leu	
2075						2080						2085			
tat	aga	att	aac	act	gat	aag	ctc	cag	tgc	ttg	cct	tgt	aca	cag	6851
Tyr	Arg	Ile	Asn	Thr	Asp	Lys	Leu	Gln	Cys	Leu	Pro	Cys	Thr	Gln	
2090						2095						2100			
gtc	tgg	tca	aga	gca	atg	tac	ttc	cgt	tta	ttt	gca	ttt	caa	tta	6896
Val	Trp	Ser	Arg	Ala	Met	Tyr	Phe	Arg	Leu	Phe	Ala	Phe	Gln	Leu	
2105						2110						2115			
ttg	ggg	tta	acg	ctt	gat	cgt	ttg	ctt	tat	ctt	gat	gca	gat	gtt	6941
Leu	Gly	Leu	Thr	Leu	Asp	Arg	Leu	Leu	Tyr	Leu	Asp	Ala	Asp	Val	
2120						2125						2130			
gtt	tgt	aaa	ggc	gat	att	agc	caa	cta	tta	cat	ctg	ggt	tta	aat	6986
Val	Cys	Lys	Gly	Asp	Ile	Ser	Gln	Leu	Leu	His	Leu	Gly	Leu	Asn	
2135						2140						2145			
gga	gcg	gtt	gct	gct	gtt	aaa	gat	gtt	gag	cca	atg	caa	gaa		7031
Gly	Ala	Val	Ala	Ala	Val	Val	Lys	Asp	Val	Glu	Pro	Met	Gln	Glu	
2150						2155						2160			
aag	gcg	gta	tcc	agg	ttg	tct	gat	cct	gaa	tta	ctt	ggg	cag	tac	7076
Lys	Ala	Val	Ser	Arg	Leu	Ser	Asp	Pro	Glu	Leu	Leu	Gly	Gln	Tyr	
2165						2170						2175			
ttt	aat	tcc	ggt	gtc	gtt	tat	tta	gac	tta	aaa	aaa	tgg	gct	gac	7121
Phe	Asn	Ser	Gly	Val	Val	Tyr	Leu	Asp	Leu	Lys	Lys	Trp	Ala	Asp	
2180						2185						2190			
gca	aaa	cta	aca	gaa	aaa	gcg	ttg	tct	att	ctt	atg	agt	aaa	gat	7166
Ala	Lys	Leu	Thr	Glu	Lys	Ala	Leu	Ser	Ile	Leu	Met	Ser	Lys	Asp	
2195						2200						2205			
aat	gtt	tat	aaa	tac	cct	gat	cag	gat	gtt	atg	aat	gtc	tta	ctg	7211
Asn	Val	Tyr	Lys	Tyr	Pro	Asp	Gln	Asp	Val	Met	Asn	Val	Leu	Leu	
2210						2215						2220			
aaa	ggg	atg	aca	tta	ttt	ttg	cct	cgt	gag	tac	aat	aca	att	tat	7256
Lys	Gly	Met	Thr	Leu	Phe	Leu	Pro	Arg	Glu	Tyr	Asn	Thr	Ile	Tyr	
2225						2230						2235			
aca	att	aaa	agt	gaa	tta	aaa	gac	aaa	aca	cat	caa	aac	tat	aaa	7301
Thr	Ile	Lys	Ser	Glu	Leu	Lys	Asp	Lys	Thr	His	Gln	Asn	Tyr	Lys	
2240						2245						2250			
aag	ctg	att	aca	gaa	agt	act	ctt	ctt	att	cat	tat	aca	ggt	gca	7346
Lys	Leu	Ile	Thr	Glu	Ser	Thr	Leu	Leu	Ile	His	Tyr	Thr	Gly	Ala	
2255						2260						2265			
act	aaa	ccg	tgg	cac	aaa	tgg	gca	att	tat	cca	tcg	gta	aaa	tac	7391

Thr Lys Pro Trp His Lys Trp Ala Ile Tyr Pro Ser Val Lys Tyr			
2270	2275	2280	
tat aaa ata gct tta gaa aat tcc ccc tgg aaa gat gac tct cca			7436
Tyr Lys Ile Ala Leu Glu Asn Ser Pro Trp Lys Asp Asp Ser Pro			
2285	2290	2295	
cga gat gcg aaa tca att att gaa ttt aaa aaa gat ata aac atc			7481
Arg Asp Ala Lys Ser Ile Ile Glu Phe Lys Lys Asp Ile Asn Ile			
2300	2305	2310	
ttt tag tgcaacatca tt			7499
Phe			
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Met Arg Tyr His Gly Asp Met Leu Leu Thr Thr Pro Val Ile Ser Thr			
1	5	10	15
Leu Lys Gln Asn Tyr Pro Asp Ala Lys Ile Asp Met Leu Leu Tyr Gln			
20	25	30	
Asp Thr Ile Pro Ile Leu Ser Glu Asn Pro Glu Ile Asn Ala Leu Tyr			
35	40	45	
Gly Ile Ser Asn Lys Gly Ala Gly Thr Phe Asp Lys Ile Lys Asn Val			
50	55	60	
Leu Ser Leu Ile Lys Thr Leu Arg Ala Asn Asn Tyr Asp Leu Val Ile			
65	70	75	80
Asn Leu Thr Asp Gln Trp Met Val Ala Leu Leu Val Arg Cys Leu Pro			
85	90	95	
Ala Arg Met Lys Ile Ser Gln Leu Tyr Gly His Arg Gln His Gly Ile			
100	105	110	
Trp Lys Lys Ser Phe Thr His Leu Ala Pro Ile His Gly Thr His Ile			
115	120	125	
Val Glu Arg Asn Leu Ser Val Leu Glu Pro Leu Gly Ile Thr Asp Phe			
130	135	140	
Tyr Thr Asp Thr Thr Met Ser Tyr Ala Glu Asp Cys Trp Lys Lys Met			
145	150	155	160
Arg Arg Glu Leu Asp Ala Leu Gly Val Lys Asp His Tyr Val Val Ile			
165	170	175	

Gln Pro Thr Ala Arg Gln Ile Phe Lys Cys Trp Asp Asn Asp Lys Phe
180 185 190

Ser Lys Val Ile Asp Ala Leu Gln Gln Arg Gly Tyr Gln Val Val Leu
195 200 205

Thr Cys Gly Pro Ser Ala Asp Asp Leu Ala Cys Val Asp Glu Ile Ala
210 215 220

Arg Gly Cys Glu Thr Lys Pro Ile Thr Gly Leu Ala Gly Lys Thr Arg
225 230 235 240

Phe Pro Glu Leu Gly Ala Leu Ile Asp His Ala Val Leu Phe Ile Gly
245 250 255

Val Asp Ser Ala Pro Gly His Ile Ala Ala Ala Val Lys Thr Pro Val
260 265 270

Ile Ser Leu Phe Gly Ala Thr Asp His Val Phe Trp Arg Pro Trp Thr
275 280 285

Glu Asn Ile Ile Gln Phe Trp Ala Gly Asn Tyr Gln Lys Met Pro Thr
290 295 300

Arg His Glu Leu Asp Arg Asn Lys Lys Tyr Leu Ser Val Ile Pro Ala
305 310 315 320

Glu Asp Val Ile Ala Ala Thr Glu Lys Leu Leu Pro Glu Asp Ala Pro
325 330 335

Ser Ala Asp Arg Asn Ala Gln Leu
340

<210> 107 <211> 371 <212> PRT <213> Escherichia coli <400> 107

Ile Val Ala Phe Cys Leu Tyr Lys Tyr Phe Pro Phe Gly Gly Leu Gln
1 5 10 15

Arg Asp Phe Met Arg Ile Ala Ser Thr Val Ala Ala Arg Gly His His
20 25 30

Val Arg Val Tyr Thr Gln Ser Trp Glu Gly Asp Cys Pro Lys Ala Phe
35 40 45

Glu Leu Ile Gln Val Pro Val Lys Ser His Thr Asn His Gly Arg Asn
50 55 60

Ala Glu Tyr Tyr Ala Trp Val Gln Asn His Leu Lys Glu His Pro Ala
65 70 75 80

Asp Arg Val Val Gly Phe Asn Lys Met Pro Gly Leu Asp Val Tyr Phe
85 90 95

Ala Ala Asp Val Cys Tyr Ala Glu Lys Val Ala Gln Glu Lys Gly Phe
100 105 110

Leu Tyr Arg Leu Thr Ser Arg Tyr Arg His Tyr Ala Ala Phe Glu Arg
115 120 125

Ala Thr Phe Glu Gln Gly Lys Ser Thr Lys Leu Met Met Leu Thr Asp
130 135 140

Lys Gln Ile Ala Asp Phe Gln Lys His Tyr Gln Thr Glu Pro Glu Arg
145 150 155 160

Phe Gln Ile Leu Pro Pro Gly Ile Tyr Pro Asp Arg Lys Tyr Ser Glu
165 170 175

Gln Ile Pro Asn Ser Arg Glu Ile Tyr Arg Gln Lys Asn Gly Ile Lys
180 185 190

Glu Gln Gln Asn Leu Leu Gln Val Gly Ser Asp Phe Gly Arg Lys
195 200 205

Gly Val Asp Arg Ser Ile Glu Ala Leu Ala Ser Leu Pro Glu Ser Leu
210 215 220

Arg His Asn Thr Leu Leu Phe Val Val Gly Gln Asp Lys Pro Arg Lys
225 230 235 240

Phe Glu Ala Leu Ala Glu Lys Leu Gly Val Arg Ser Asn Val His Phe
245 250 255

Phe Ser Gly Arg Asn Asp Val Ser Glu Leu Met Ala Ala Asp Leu
260 265 270

Leu Leu His Pro Ala Tyr Gln Glu Ala Ala Gly Ile Val Leu Leu Glu
275 280 285

Ala Ile Thr Ala Gly Leu Pro Val Leu Thr Thr Ala Val Cys Gly Tyr
290 295 300

Ala His Tyr Ile Ala Asp Ala Asn Cys Gly Thr Val Ile Ala Glu Pro
305 310 315 320

Phe Ser Gln Glu Gln Leu Asn Glu Val Leu Arg Lys Ala Leu Thr Gln
325 330 335

Ser Pro Leu Arg Met Ala Trp Ala Glu Asn Ala Arg His Tyr Ala Asp
340 345 350

Thr Gln Asp Leu Tyr Ser Leu Pro Glu Lys Ala Ala Asp Ile Ile Thr
355 360 365

Gly Gly Leu
370

<210> 108 <211> 265 <212> PRT <213> Escherichia coli <400> 108

Met Val Glu Leu Lys Glu Pro Leu Ala Thr Leu Trp Arg Gly Lys Asp
1 5 10 15

Ala Phe Ala Glu Val Lys Lys Leu Asn Gly Glu Val Phe Arg Glu Leu
20 25 30

Glu Thr Arg Arg Thr Leu Arg Phe Glu Leu Ser Gly Lys Ser Tyr Phe
35 40 45

Leu Lys Trp His Lys Gly Thr Thr Leu Lys Glu Ile Ile Lys Asn Leu
50 55 60

Leu Ser Leu Arg Met Pro Val Leu Gly Ala Asp Arg Glu Trp His Ala
65 70 75 80

Ile His Arg Leu Ser Asp Val Gly Val Asp Thr Met Lys Gly Ile Gly
85 90 95

Phe Gly Glu Lys Gly Leu Asn Pro Leu Thr Arg Ala Ser Phe Ile Ile
100 105 110

Thr Glu Asp Leu Thr Pro Thr Ile Ser Leu Glu Asp Tyr Cys Ala Asp
115 120 125

Trp Ala Val Asn Pro Pro Asp Ile Arg Val Lys Arg Met Leu Ile Ala
130 135 140

Arg Val Ala Thr Met Val Arg Lys Met His Thr Ala Gly Ile Asn His
145 150 155 160

Arg Asp Cys Tyr Ile Cys His Phe Leu Leu His Leu Pro Phe Thr Gly
165 170 175

Arg Glu Asp Glu Leu Lys Ile Ser Val Ile Asp Leu His Arg Ala Gln
180 185 190

Ile Arg Ala Lys Val Pro Arg Arg Trp Arg Asp Lys Asp Leu Ile Gly
195 200 205

Leu Tyr Phe Ser Ser Met Asn Ile Gly Leu Thr Gln Arg Asp Ile Trp
210 215 220

Arg Phe Met Lys Val Tyr Phe Gly Met Pro Leu Arg Lys Ile Leu Ser
225 230 235 240

Leu Glu Gln Asn Leu Leu Asn Met Ala Ser Val Lys Ala Glu Arg Ile
245 250 255

Lys Glu Arg Thr Gln Arg Lys Gly Leu
260 265

<210> 109 <211> 311 <212> PRT <213> Escherichia coli <400> 109

Met Thr Ile Tyr Phe Ile Asn Trp Val Ala Asp Tyr Glu Leu Lys Met
1 5 10 15

Ile Gln Tyr Leu Lys Lys Tyr Lys Ile Lys Asn Ile Thr Thr Pro
20 25 30

Lys Lys Tyr Asn Trp Ile Asn Lys Lys Ile Ser Lys Ile Gly Met Asp
35 40 45

Asn Ala Trp Leu Gly Arg Leu Phe Ile Lys His Tyr Leu Asn Asp Ile
50 55 60

Lys Lys Asp Asp Ile Ile Ile Asn Asp Ser Val Val Asn Lys Gly
65 70 75 80

Ile Asn Lys Gln Ile Leu Lys Asn Ile Asn Cys His Lys Val Leu Leu
85 90 95

Leu Arg Asn Thr Val Gly Glu Asp Phe Ile Leu Asp Asn Ala Asn Tyr
100 105 110

Phe Asp Ile Ile Tyr Asp Phe Glu His Arg Phe Ile Gly Asn Glu Lys
115 120 125

Ile Lys Ala Ile Glu Gln Phe Phe Pro Ile Gly Met Asp Glu Ile Arg
130 135 140

Asn Tyr Ser Leu Ser Asp Lys Asn Asn Ser Gln Pro Ile Cys Phe Phe
145 150 155 160

Leu Gly Arg Asp Lys Gly Arg Leu Gln Ile Ile Asn Glu Leu Ala Glu
165 170 175

Arg Leu Thr Thr Leu Gly Cys Lys Leu Asp Phe Asn Val Val Lys Asp
180 185 190

Lys Thr Ser Ser Thr Ser Lys Tyr Leu Ile Glu Lys Gln Ile Ser
195 200 205

Tyr Glu Glu Asn Ile Arg Arg Thr Leu Asn Ala Asn Ile Ile Val Asp
210 215 220

Ile Thr Lys Glu Asn Gln Ser Gly Trp Thr Leu Arg Ile Leu Glu Ala
225 230 235 240

Leu Phe Phe Asn Lys Lys Leu Ile Thr Asn Asn Ile Asn Val Phe Gly
245 250 255

Ser Glu Ile Tyr Ser Glu Ser Arg Phe Phe Ile Ile Gly His Asp Asp
260 265 270

Trp Asp Lys Leu Glu Tyr Phe Ile Asn Ser Ser Val Lys Pro Met Asp
275 280 285

Tyr Asp Ser Leu Tyr Lys Phe Ser Pro Asp Lys Met Met Ser Thr Ile
290 295 300

Val Ser Asp Phe Ile Asp Lys
305 310

<210> 110 <211> 369 <212> PRT <213> Escherichia coli <400> 110

Val Ser Phe Thr Gln Leu Met Arg Val Ser Met Lys Ile Ala Phe Ile
1 5 10 15

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Gly Glu Ala Val Ser Gly Phe Gly Gly Met Glu Thr Val Ile Arg Asp
20 25 30

Val Ile Thr Thr Phe Arg Gln Gln His Ile Gln Ser Glu Met Phe Phe
35 40 45

Phe Cys Arg Asn Asp Lys Met Asp Lys Gly Trp Leu Glu Gly Ile Lys
50 55 60

Tyr Ser Cys Ser Phe Ser Asn Ile Arg Leu Gly Phe Leu Arg Arg Ala
65 70 75 80

Lys His Ile His Ala Leu Ser Lys Trp Leu Gln Glu Tyr Gln Pro Asp
85 90 95

Ile Val Ile Cys Ile Asp Val Ile Ser Cys Leu Phe Ala Ala Lys Ala
100 105 110

Arg Lys Lys Ser Gly Ile Asp Met Pro Val Phe Ser Trp Pro His Phe
115 120 125

Ser Leu Asp His Lys Lys His Ala Glu Tyr Ile Thr Cys Ala Asp Tyr
130 135 140

His Leu Ala Ile Ser Ser Gly Ile Lys Gln Gln Met Ile Asn Arg Gly
145 150 155 160

Val Ala Glu Ser Thr Ile Asn Val Ile Phe Asn Pro Val Glu Thr Lys
165 170 175

Asp Ser Val Ile Pro Ala Pro Glu Glu Gly Glu Thr Ala Thr Phe Ile
180 185 190

Tyr Val Gly Arg Met Lys Phe Glu Gly Gln Lys Arg Val Lys Asp Leu
195 200 205

Leu Asp Gly Leu Ser Gln Ala Lys Gly Asn Trp Lys Leu His Val Leu
210 215 220

Gly Asp Gly Ser Asp Phe Glu Lys Cys Gln Ala Tyr Gly Arg Glu Leu
225 230 235 240

Asn Ile Asp Asp Arg Ile Val Trp Tyr Gly Trp Gln Gln Tyr Pro Trp
245 250 255

Glu Leu Val Gln Gln Asp Ile Glu Lys Val Ser Ala Leu Leu Thr
260 265 270

Ser Ser Phe Glu Gly Phe Pro Met Thr Leu Leu Glu Ala Leu Ser Trp
275 280 285

Gly Ile Pro Cys Ile Ser Ala Asp Cys Val Ser Gly Pro Ala Asp Ile
290 295 300

Ile Gln Pro Asp Val Asn Gly His Leu Tyr Gln Pro Gly Asp Ile Ala
305 310 320

Gly Phe Val Thr Leu Leu Asn Lys Tyr Ile Ala Gly Glu Ile His Ile
325 330 335

Glu His Glu Lys Ile Pro Ala Ser Ile Asp Glu Phe Tyr Gln Ser Lys
340 345 350

Tyr Tyr Asp Arg Leu His Lys Val Ile Ile Ser Ala Ile Ser Arg Arg
355 360 365

Lys

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Asp Tyr Asp His Lys Val Glu Thr Glu Asn Leu Cys Leu Asp Ile Ala
20 25 30

Tyr Gly Thr Asp Lys Asn Phe Leu Phe Gly Cys Gly Ile Ser Ile Ala
35 40 45

Ser Ile Leu Lys Tyr Asn Glu Gly Ser Arg Leu Cys Phe His Ile Phe
50 55 60

Thr Asp Tyr Phe Gly Asp Asp Asp Arg Lys Tyr Phe Asp Ala Leu Ala
65 70 75 80

Leu Gln Tyr Lys Thr Arg Ile Lys Ile Tyr Leu Ile Asn Gly Asp Arg
85 90 95

Leu Arg Ser Leu Pro Ser Thr Lys Asn Trp Thr His Ala Ile Tyr Phe
100 105 110

Arg Phe Val Ile Ala Asp Tyr Phe Ile Asn Lys Ala Pro Lys Val Leu
115 120 125

Tyr Leu Asp Ala Asp Ile Ile Cys Gln Gly Thr Ile Glu Pro Leu Ile
130 135 140

Asn Phe Ser Phe Pro Asp Asp Lys Val Ala Met Val Val Thr Glu Gly
145 150 155 160

Gln Ala Asp Trp Trp Glu Lys Arg Ala His Ser Leu Gly Val Ala Gly
165 170 175

Ile Ala Lys Gly Tyr Phe Asn Ser Gly Phe Leu Leu Ile Asn Thr Ala
180 185 190

Gln Trp Ala Ala Gln Gln Val Ser Ala Arg Ala Ile Ala Met Leu Asn
195 200 205

Glu Pro Glu Ile Ile Lys Lys Ile Thr His Pro Asp Gln Asp Val Leu
210 215 220

Asn Met Leu Leu Ala Asp Lys Leu Ile Phe Ala Asp Ile Lys Tyr Asn
225 230 235 240

Thr Gln Phe Ser Leu Asn Tyr Gln Leu Lys Glu Ser Phe Ile Asn Pro
245 250 255

Val Thr Asn Asp Thr Ile Phe Ile His Tyr Ile Gly Pro Thr Lys Pro
260 265 270

Trp His Asp Trp Ala Trp Asp Tyr Pro Val Ser Gln Ala Phe Met Glu
275 280 285

Ala Lys Asn Ala Ser Pro Trp Lys Asn Thr Ala Leu Leu Lys Pro Asn
290 295 300

Asn Ser Asn Gln Leu Arg Tyr Ser Ala Lys His Met Leu Lys Lys His
305 310 315 320

Arg Tyr Leu Lys Gly Phe Ser Asn Tyr Leu Phe Tyr Phe Ile Glu Lys
325 330 335

Ile Lys His

<210> 112 <211> 314 <212> PRT <213> Escherichia coli <400> 112

Val Asp Ser Phe Pro Ala Ile Glu Ile Asp Lys Val Lys Ala Trp Asp
1 5 10 15

Phe Arg Leu Ala Asn Ile Asn Thr Ser Glu Cys Leu Asn Val Ala Tyr
20 25 30

Gly Val Asp Ala Asn Tyr Leu Asp Gly Val Gly Val Ser Ile Thr Ser
35 40 45

Ile Val Leu Asn Asn Arg His Ile Asn Leu Asp Phe Tyr Ile Ile Ala
50 55 60

Asp Val Tyr Asn Asp Gly Phe Phe Gln Lys Ile Ala Lys Leu Ala Glu
65 70 75 80

Gln Asn Gln Leu Arg Ile Thr Leu Tyr Arg Ile Asn Thr Asp Lys Leu
85 90 95

Gln Cys Leu Pro Cys Thr Gln Val Trp Ser Arg Ala Met Tyr Phe Arg
100 105 110

Leu Phe Ala Phe Gln Leu Leu Gly Leu Thr Leu Asp Arg Leu Leu Tyr
115 120 125

Leu Asp Ala Asp Val Val Cys Lys Gly Asp Ile Ser Gln Leu Leu His
130 135 140

Leu Gly Leu Asn Gly Ala Val Ala Ala Val Val Lys Asp Val Glu Pro
145 150 155 160

Met Gln Glu Lys Ala Val Ser Arg Leu Ser Asp Pro Glu Leu Leu Gly
165 170 175

Gln Tyr Phe Asn Ser Gly Val Val Tyr Leu Asp Leu Lys Lys Trp Ala
180 185 190

Asp Ala Lys Leu Thr Glu Lys Ala Leu Ser Ile Leu Met Ser Lys Asp
195 200 205

Asn Val Tyr Lys Tyr Pro Asp Gln Asp Val Met Asn Val Leu Leu Lys
210 215 220

Gly Met Thr Leu Phe Leu Pro Arg Glu Tyr Asn Thr Ile Tyr Thr Ile
225 230 235 240

Lys Ser Glu Leu Lys Asp Lys Thr His Gln Asn Tyr Lys Lys Leu Ile
245 250 255

Thr Glu Ser Thr Leu Leu Ile His Tyr Thr Gly Ala Thr Lys Pro Trp
260 265 270

His Lys Trp Ala Ile Tyr Pro Ser Val Lys Tyr Tyr Lys Ile Ala Leu
275 280 285

Glu Asn Ser Pro Trp Lys Asp Asp Ser Pro Arg Asp Ala Lys Ser Ile
290 295 300

Ile Glu Phe Lys Lys Asp Ile Asn Ile Phe
305 310

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Met Gly Thr Arg Thr Gly Gly Arg Gly Pro Gly Ser Val Arg Gln Ala
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cct gac gtc ggc cgc cgt gtc ggt gcc cggt gtt gct tac cca gat 96
Pro Asp Val Gly Arg Arg Val Gly Ala Arg Arg Val Ala Tyr Pro Asp
20 25 30

cgc ggc gac ccg ggc gct ggc ccg tca agg cat gga cct cgt ggc cac 144
Arg Gly Asp Pro Gly Ala Gly Pro Ser Arg His Gly Pro Arg Gly His
35 40 45

ccc gcc ggt cgc cat ggc ggg cat tcg caa ggt gtg ctg gcg gtg gaa 192
Pro Ala Gly Arg His Gly Gly His Ser Gln Gly Val Leu Ala Val Glu
50 55 60

gcc ctc aag gct ggt ggg gca cgc gac gtc gag ctg ttt gcc ttg gcc 240
Ala Leu Lys Ala Gly Gly Ala Arg Asp Val Glu Leu Phe Ala Leu Ala
65 70 75 80

cag ttg atc ggt gcc gga acg ctg gtg gcc cgc ccg cgc gaa ttt 288
Gln Leu Ile Gly Ala Ala Gly Thr Leu Val Ala Arg Arg Arg Glu Phe
85 90 95

ccg tcc tgg gcg atc gcg ccg atg gta tcg gtc acc aac gcc gac ccc 336
Pro Ser Trp Ala Ile Ala Pro Met Val Ser Val Thr Asn Ala Asp Pro
100 105 110

gag cgc atc ggc ccg ttg ctc gac gag ttc gcc cag gac gtg cgc acg 384
Glu Arg Ile Gly Arg Leu Leu Asp Glu Phe Ala Gln Asp Val Arg Thr

115	120	125	
gtg ctg cca ccg gtg ttg tcc atc cgc aac ggc cg ^g cgt gcc gtc gtc Val Leu Pro Pro Val Leu Ser Ile Arg Asn Gly Arg Arg Ala Val Val			432
130	135	140	
atc acc ggc acc ccc gag cag ctg tcg cgt ttc gag ctt tat tgc cgc Ile Thr Gly Thr Pro Glu Gln Leu Ser Arg Phe Glu Leu Tyr Cys Arg			480
145	150	155	160
cag atc tcc gag aag gaa gcc gac cgc aag aac aag gtc cgc ggc Gln Ile Ser Glu Lys Glu Glu Ala Asp Arg Lys Asn Lys Val Arg Gly			528
165	170	175	
ggc gac gtc ttc tcg ccg gtc ttc gag ccg gtg cag gtg gag gtg ggc Gly Asp Val Phe Ser Pro Val Phe Glu Pro Val Gln Val Glu Val Gly			576
180	185	190	
ttt cac acc ccg cgg cta tcc gac ggg atc gac atc gtc gc ^g ggc tgg Phe His Thr Pro Arg Leu Ser Asp Gly Ile Asp Ile Val Ala Gly Trp			624
195	200	205	
gcc gag aag gc ^g ggc ctc gat gtc gcc ttg gct ccg gag ctg gcc gat Ala Glu Lys Ala Gly Leu Asp Val Ala Leu Ala Arg Glu Leu Ala Asp			672
210	215	220	
gcc atc ttg atc aga aag gtc gac tgg gtc gac gag atc acc cgt gtc Ala Ile Leu Ile Arg Lys Val Asp Trp Val Asp Glu Ile Thr Arg Val			720
225	230	235	240
cac ccg gcc ggc gcc ccg tgg atc ctc gac ctg ggg ccg ggc gac atc His Arg Ala Gly Ala Arg Trp Ile Leu Asp Leu Gly Pro Gly Asp Ile			768
245	250	255	
ctg acc cga ctg acc gca ccg gtg atc cgc ggc ctg ggc atc ggc atc Leu Thr Arg Leu Thr Ala Pro Val Ile Arg Gly Leu Gly Ile Gly Ile			816
260	265	270	
gtg ccg gc ^g cgt acc ccg ggt ggc cag cgc aac ctg ttc acc gtc ggc Val Pro Ala Arg Thr Arg Gly Gly Gln Arg Asn Leu Phe Thr Val Gly			864
275	280	285	
gcc acc ccc gag gtt gcc ccg gcc tgg tcg agc tac gca ccg acc gtg Ala Thr Pro Glu Val Ala Arg Ala Trp Ser Ser Tyr Ala Pro Thr Val			912
290	295	300	
gtt cgc ctc ccc gac ggc agg gtc aag ctc tcg acg aag ttc acc ccg Val Arg Leu Pro Asp Gly Arg Val Lys Leu Ser Thr Lys Phe Thr Arg			960
305	310	315	320
ctg acc cgc ccg atc ctg ctc gcg ggc atg acc ccg acc acc Leu Thr Arg Arg Ser Pro Ile Leu Leu Ala Gly Met Thr Pro Thr Thr			1008
325	330	335	
gtg gac gcc aag atc gtc gcc gc ^g gc ^g gcc aac ggc ccg cac tgg gcc Val Asp Ala Lys Ile Val Ala Ala Ala Asn Gly Arg His Trp Ala			1056
340	345	350	
gag ctg gc ^g gc ^g ccg agg tca ccg aag aga tct tcg gta acc gca Glu Leu Ala Ala Arg Gly Arg Ser Pro Lys Arg Ser Ser Val Thr Ala			1104

355	360	365	
tcg aac aaa tgg ccg gcc tgc tcg agc cg ^g gca cct atc agt tca Ser Asn Lys Trp Pro Ala Cys Ser Ser Arg Ala Ala Pro Ile Ser Ser 370	375	380	1152
acg cgc tgt tcc tcg atc cct acc tgt gaa gct tca ggt ggg cg ^g caa Thr Arg Cys Ser Ser Ile Pro Thr Cys Glu Ala Ser Gly Gly Arg Gln 385	390	395	1200
gcg gtt ggt gca gaa gg ^c ccg cca gtc cg ^g cg ^c gat cga cg ^g cgt Ala Val Gly Ala Glu Gly Pro Pro Val Arg Arg Asp Arg Arg Arg 405	410	415	1248
ggt gat cag cg ^c cg ^g cat ccc aga cct cga cga ggc cgt cga gct gat Gly Asp Gln Arg Arg His Pro Arg Pro Arg Arg Gly Arg Arg Ala Asp 420	425	430	1296
cga cga act ggg cga cat cg ^g cat cag cca cgt cgt gtt caa acc cg ^g Arg Arg Thr Gly Arg His Arg His Gln Pro Arg Arg Val Gln Thr Arg 435	440	445	1344
gac cat cga gca gat ccg ctc ggt gat tcg cat cg ^c cac cga ggt gcc Asp His Arg Ala Asp Pro Leu Gly Asp Ser His Arg His Arg Gly Ala 450	455	460	1392
cac caa gcc ggt gat cat gca cgt cga ggg ccg ggc gc ^g ccg gc ^g ggc His Gln Ala Gly Asp His Ala Arg Arg Gly Pro Gly Ala Pro Ala Gly 465	470	475	1440
acc att cct ggg agg atc tca cac ctg ctg ctg gct acc tac tcg gca Thr Ile Pro Gly Arg Ile Ser His Leu Leu Leu Ala Thr Tyr Ser Ala 485	490	495	1488
gat cgg gca ccg cg ^c caa cat cac gtg tgc gtc ggc ggc cat ctc Asp Arg Ala Pro Arg Gln His His Val Cys Val Gly Gly His Leu 500	505	510	1536
ggc acc ccg aag aag gg ^c tgc gga tat ttg tcc ggg cct ggg cg ^c agc Gly Thr Pro Lys Lys Gly Cys Gly Tyr Leu Ser Gly Pro Gly Arg Ser 515	520	525	1584
gta cgg ctt ccc att gat gcc gat cga cg ^c atc ctg gtc ggc acc gcg Val Arg Leu Pro Ile Asp Ala Asp Arg Arg Ile Leu Val Gly Thr Ala 530	535	540	1632
gcg atg gcc acc aag gaa tcc acc acg tcg cca tcg gtc aag cg ^g atg Ala Met Ala Thr Lys Glu Ser Thr Thr Ser Pro Ser Val Lys Arg Met 545	550	555	1680
ctc gtc gac act cag gg ^c acc gac caa tgg atc agc gcc gga aaa gc ^c Leu Val Asp Thr Gln Gly Thr Asp Gln Trp Ile Ser Ala Gly Lys Ala 565	570	575	1728
cag ggc cg ^c atg cct cca gcc gag tca gct cg ^g tgc cga cat cca cga Gln Gly Arg Met Pro Pro Ala Glu Ser Ala Arg Cys Arg His Pro Arg 580	585	590	1776
gat cga cac agc gca tcc gtg cg ^c cg ^c tgc tcg acg agg tgg ccg gtg Asp Arg His Ser Ala Ser Val Arg Arg Cys Ser Thr Arg Trp Pro Val 595			1824

595	600	605	
acg cgg agg cgg tcg cgg agc gtc gca tgg cca aga ccg cca agc cct Thr Arg Arg Arg Ser Arg Ser Val Ala Trp Pro Arg Pro Pro Ser Pro	610	615	1872
		620	
act tgc cga cgt cgc cga cat gac cta cct gca gtg gct gcg ggc gct Thr Cys Arg Arg Arg His Asp Leu Pro Ala Val Ala Ala Gly Ala	625	630	1920
		635	
		640	
acg tcg aac tgg cca tcg ggg aag gca act cga ccg ccg aca ccg cct Thr Ser Asn Trp Pro Ser Gly Lys Ala Thr Arg Pro Pro Thr Pro Pro	645	650	1968
		655	
cgg tgg gca gcc cgt ggc tgg ccg aca ctg gcg gga ccg ctt cga gca Arg Trp Ala Ala Arg Gly Trp Pro Thr Leu Ala Gly Pro Leu Arg Ala	660	665	2016
		670	
gat gct gca gcg tgc cga agc ccg gtt gca ccc aca gga ttt cgg ccc Asp Ala Ala Ala Cys Arg Ser Pro Val Ala Pro Thr Gly Phe Arg Pro	675	680	2064
		685	
gat cca gac gct att cac cga tgc tgg cct gct gga caa tcc gca gca Asp Pro Asp Ala Ile His Arg Cys Trp Pro Ala Gly Gln Ser Ala Ala	690	695	2112
		700	
gcf atc gcc gcc ctc gtg gcg cgc tac ccc gac gcc gag acc gtg cag Ala Ile Ala Ala Leu Val Ala Arg Tyr Pro Asp Ala Glu Thr Val Gln	705	710	2160
		715	
		720	
ttg cat ccc gcg gat gtg ccc ttt ttc gtg acg ttg tgc aag acg ctg Leu His Pro Ala Asp Val Pro Phe Phe Val Thr Leu Cys Lys Thr Leu	725	730	2208
		735	
ggc aag ccg gtc aac ttc gtg ccg gcg atc gac ctc gtc gtg cgc gct Gly Lys Pro Val Asn Phe Val Pro Ala Ile Asp Leu Val Val Arg Ala	740	745	2256
		750	
ggf ggc gca gcg act cgc tgt ggc agg ccc acg acg ccc gct acg acg Gly Gly Ala Ala Thr Arg Cys Gly Arg Pro Thr Thr Pro Ala Thr Thr	755	760	2304
		765	
ccg atg cgg tgt gca tca ttc cgg gca cgc gtc ggt acg cgc atc acc Pro Met Arg Cys Ala Ser Phe Arg Ala Arg Val Gly Ser Arg Ile Thr	770	775	2352
		780	
ccg atg gat gaa ccc gtc ggt gag ttg ctg gac gct ttc gag caa gcc Arg Met Asp Glu Pro Val Gly Glu Leu Leu Asp Ala Phe Glu Gln Ala	785	790	2400
		795	
		800	
gca atc gat gaa gtg ctc ggc gcc ggt gtc gag ccg aag gat gtc gcg Ala Ile Asp Glu Val Leu Gly Ala Gly Val Glu Pro Lys Asp Val Ala	805	810	2448
		815	
tcc ggc cgg ctg ggc cgg gcc gac gtg gcc gga ccg ttg gct gtc gtc Ser Gly Arg Leu Gly Arg Ala Asp Val Ala Gly Pro Leu Ala Val Val	820	825	2496
		830	
ctc gac gca ccc gat gtg cgc tgg gcc ggt cgc acc gtc acc aac ccg Leu Asp Ala Pro Asp Val Arg Trp Ala Gly Arg Thr Val Thr Asn Pro			2544

835	840	845	
gtg cat cgg atc cgc gac ccg gcc gaa tgg cag gtg cac gat gga ccc Val His Arg Ile Arg Asp Pro Ala Glu Trp Gln Val His Asp Gly Pro 850	855	860	2592
gaa aac ccg cgc gcc gca cac tca tcc acc ggc gcc cgg ctg cag acg Glu Asn Pro Arg Ala Ala His Ser Ser Thr Gly Ala Arg Leu Gln Thr 865	870	875	2640
cac ggc gac gac gtc gcc ttg agc gtc gcg cgt ctc ggg cac ctg ggt His Gly Asp Asp Val Ala Leu Ser Val Ala Arg Leu Gly His Leu Gly 885	890	895	2688
cga cat ccg att cac gtt gcc ggc caa cac cgt cga tgg cgg cac ccc Arg His Pro Ile His Val Ala Gly Gln His Arg Arg Trp Arg His Pro 900	905	910	2736
ggt gat cgc cac cga gga cgc cac cac gcc atg cgc acg gtg ctg cga Gly Asp Arg His Arg Gly Arg His His Ala Met Arg Thr Val Leu Arg 915	920	925	2784
tcg ccg ccg gtg tcg aca gcc ccg agt tct tgc tgc ggt ggc caa cgg Ser Pro Pro Val Ser Thr Ala Arg Ser Ser Cys Cys Gly Gly Gln Arg 930	935	940	2832
gac ggc cac ttt gac ggt gga ctg gca ccc cga gcg tgt tgc cga cca Asp Gly His Phe Asp Gly Gly Leu Ala Pro Arg Ala Cys Cys Arg Pro 945	950	955	2880
cac cgt cac cgc cac gtt ccg tgc gcg ctg gca ccc acg ctc acc aac His Arg His Arg His Val Arg Cys Ala Leu Ala Pro Ser Leu Thr Asn 965	970	975	2928
gtg ccg acg cga ctc gtc ggc cct tgt tgg cca gcg gtt ttc gcg gcc Val Pro Thr Arg Leu Val Gly Pro Cys Trp Pro Ala Val Phe Ala Ala 980	985	990	2976
atc gga tcg gcg gtc acc gac acc ggt gag ccg gtg gtg gaa ggc ctg Ile Gly Ser Ala Val Thr Asp Thr Gly Glu Pro Val Val Glu Gly Leu 995	1000	1005	3024
ctg agc ctg gtg cat ctg gac acg ccg ccg cgc gtg gtc ggt cag Leu Ser Leu Val His Leu Asp Thr Arg Pro Arg Val Val Gly Gln 1010	1015	1020	3069
ctg ccc acg gtc ccg gcc caa ttg acc gtc acg caa cgg ctg cca Leu Pro Thr Val Pro Ala Gln Leu Thr Val Thr Gln Arg Leu Pro 1025	1030	1035	3114
acg caa ccg ata cgg aca tgg gcc gcg tcg tgc cgg tct cgg tcg Thr Gln Pro Ile Arg Thr Trp Ala Ala Ser Cys Arg Ser Arg Ser 1040	1045	1050	3159
tcg ttc acc gca tgg cgc cgt gat cgc cac tct cga gga gcg att Ser Phe Thr Ala Trp Arg Arg Asp Arg His Ser Arg Gly Ala Ile 1055	1060	1065	3204
cgc gat cct ggg tcg cac cgg ttc gcc gag ctg gac cgg cgc gag Arg Asp Pro Gly Ser His Arg Phe Ala Glu Leu Asp Arg Arg Glu			3249

1070	1075	1080			
ccg gtg gcg cgg tgt cgc gaa Pro Val Ala Arg Cys Arg Glu	1085	cgc cac cga cac ccc Arg His Arg His Pro	1095	gct cgt cgc Ala Arg Arg	3294
1090		1095			
cgc cgc gac gtc acg atc acc Arg Arg Asp Val Thr Ile Thr	1100	gct ccg gtc gac atg Ala Pro Val Asp Met	1105	cgc ccg ttc Arg Pro Phe	3339
1105		1110			
gct gtg gtg tcc ggc gac cac Ala Val Val Ser Gly Asp His	1115	aac ccc att cac acc Asn Pro Ile His Thr	1120	gac cgg gcc Asp Arg Ala	3384
1120		1125			
gcc gct gct tgc cgg cct gga Ala Ala Ala Cys Arg Pro Gly	1130	gtc gcc gat cgt gca Val Ala Asp Arg Ala	1135	cgg cat gtg Arg His Val	3429
1135		1140			
gct gtc ggc cgc ggc gca aca Ala Val Gly Arg Gly Ala Thr	1145	cgc ggt gac cgg cac Arg Gly Asp Arg His	1150	cga cgg gca Arg Arg Ala	3474
1150		1155			
ggc ccg cca ccg gcc cgg ctg Gly Pro Pro Pro Ala Arg Leu	1160	gtc ggc tgg acc gcg Val Gly Trp Thr Ala	1165	cgg ttt ttg Arg Phe Leu	3519
1165		1170			
ggc atg gtg gcc ccg gcg acg Gly Met Val Ala Pro Ala Thr	1175	agg tgg act tcc ggt Arg Trp Thr Ser Gly	1180	cga gcg cgt Arg Ala Arg	3564
1180		1185			
cggtatc gac cag ggc gca gag Arg Ile Asp Gln Gly Ala Glu	1190	att gtg gac gtg gcc Ile Val Asp Val Ala	1195	gct cgc gtc Ala Arg Val	3609
1195		1200			
gggttcg gat cta gtg atg tcg Gly Ser Asp Leu Val Met Ser	1205	gcc tcc gcg cga ctg Ala Ser Ala Arg Leu	1210	gcc gca ccc Ala Ala Pro	3654
1210		1215			
aag acg gtc tac gca ttc ccc Lys Thr Val Tyr Ala Phe Pro	1220	ggc cag ggc atc caa Gly Gln Gly Ile Gln	1225	cac aag ggc His Lys Gly	3699
1225		1230			
atg ggc atg gag gtg cgc gcc Met Gly Met Glu Val Arg Ala	1235	gct cca agg cgg ccc Ala Pro Arg Arg Pro	1240	gca agg tgt Ala Arg Cys	3744
1240		1245			
ggg aca ccg cgg aca agt tca Gly Thr Pro Arg Thr Ser Ser	1250	ccc gcg aca ccc tgg Pro Ala Thr Pro Trp	1255	gct tct cgg Ala Ser Arg	3789
1255		1260			
tac tgc acg tgg tcc gcg aca Tyr Cys Thr Trp Ser Ala Thr	1265	acc cga cca gca tca Thr Arg Pro Ala Ser	1270	tcg cca gcg Ser Pro Ala	3834
1270		1275			
gtg tgc act acc acc acc gac Val Cys Thr Thr Thr Asp	1280	ggg gtg ctc tac ctg Gly Val Leu Tyr Leu	1285	acg cag ttc Thr Gln Phe	3879
1285		1290			
acc cag gtc gcg atg gcg acg Thr Gln Val Ala Met Ala Thr		gtg gcg gcc ggg cag Val Ala Ala Gly Gln		gtc gcc gag Val Ala Glu	3924

1295	1300	1305	
atg cgt gaa cag gga gcc ttc	gtc gaa ggc gcc atc	gcg tgc ggc	3969
Met Arg Glu Gln Gly Ala Phe	Val Glu Gly Ala Ile	Ala Cys Gly	
1310	1315	1320	
cac tcg gtc ggc gag tac acc	gcg ctg gcc tgc gtg	acc ggc atc	4014
His Ser Val Gly Glu Tyr Thr	Ala Leu Ala Cys Val	Thr Gly Ile	
1325	1330	1335	
tac caa ctg gaa gcc ttg ctg	gag atg gtg ttt cac	cgc ggg tcg	4059
Tyr Gln Leu Glu Ala Leu Leu	Glu Met Val Phe His	Arg Gly Ser	
1340	1345	1350	
aag atg cac gac atc gtt ccg	cgc gac gag ctc ggc	cgc tcc aac	4104
Lys Met His Asp Ile Val Pro	Arg Asp Glu Leu Gly	Arg Ser Asn	
1355	1360	1365	
tat cgg ctg tcg gcc atc cg	ccg tcc cag atc gac	ctc gac gac	4149
Tyr Arg Leu Ser Ala Ile Arg	Pro Ser Gln Ile Asp	Leu Asp Asp	
1370	1375	1380	
gcc gac gtg ccc gcg ttc gtc	gcc ggg atc gcg gag	agc acc ggt	4194
Ala Asp Val Pro Ala Phe Val	Ala Gly Ile Ala Glu	Ser Thr Gly	
1385	1390	1395	
gaa ttc ctg gag atc gag aat	ttc aac ctc ggt ggc	tcg caa tac	4239
Glu Phe Leu Glu Ile Glu Asn	Phe Asn Leu Gly	Ser Gln Tyr	
1400	1405	1410	
gcg atc gcg ggc acg gta cgc	ggc ctc gag gcg ctc	gag gcc gag	4284
Ala Ile Ala Gly Thr Val Arg	Gly Leu Glu Ala Leu	Glu Ala Glu	
1415	1420	1425	
gtg gag cgg cgc cgc gag ctc	acc ggc ggc cga cgg	tcg ttc att	4329
Val Glu Arg Arg Arg Glu Leu	Thr Gly Gly Arg Arg	Ser Phe Ile	
1430	1435	1440	
ttg gtg ccc ggc atc gat gtt	ccg ttc cac tcg cga	gtg ctg cgg	4374
Leu Val Pro Gly Ile Asp Val	Pro Phe His Ser Arg	Val Leu Arg	
1445	1450	1455	
gtc ggg gtg gcc gaa ttc cgg	cgc tcg ctg gac cgg	gtc atg cgg	4419
Val Gly Val Ala Glu Phe Arg	Arg Ser Leu Asp Arg	Val Met Arg	
1460	1465	1470	
ccg acg cgg acc cga cct gat	cat cgg gcg cta cat	tcc caa cct	4464
Pro Thr Arg Thr Arg Pro Asp	His Arg Ala Leu His	Ser Gln Pro	
1475	1480	1485	
ggt gcc gcg gaa gtt caa ccc	tgg acc gcg act tca	tcc agg aaa	4509
Gly Ala Ala Glu Val Gln Pro	Trp Thr Ala Thr Ser	Ser Arg Lys	
1490	1495	1500	
tcc ggg att tgg tgc ccc gcc	gag ccg ctc gac gag	atc ctc gcc	4554
Ser Gly Ile Trp Cys Pro Ala	Glu Pro Leu Asp Glu	Ile Leu Ala	
1505	1510	1515	
gac tac gac acc tgg ctt cgc	gac gac cgg cga gat	ggc gcg cac	4599
Asp Tyr Asp Thr Trp Leu Arg	Asp Asp Arg Arg Asp	Gly Ala His	

1520	1525	1530	
ggt gtt cat cga gct gct ggc Gly Val His Arg Ala Ala Gly	atg gca att cgc cag Met Ala Ile Arg Gln	ccc ggt gcg Pro Gly Ala	4644
1535	1540	1545	
ctg gat cga gac gca gga tct Leu Asp Arg Asp Ala Gly Ser	gct gtt cat cga gga Ala Val His Arg Gly	ggc gcc ggc Gly Ala Gly	4689
1550	1555	1560	
ggg ctg ggt gtg gag cga ttc Gly Leu Gly Val Glu Arg Phe	gtc gag atc ggt gtg Val Glu Ile Gly Val	aag agc tca Lys Ser Ser	4734
1565	1570	1575	
ccg acg gtg gcg ggg tct tgc Pro Thr Val Ala Gly Ser Cys	cac caa cac cct caa His Gln His Pro Gln	act gcc cga Thr Ala Arg	4779
1580	1585	1590	
ata cgc cca cag cac agt gaa Ile Arg Pro Gln His Ser Glu	gtg ctc aac gcc gag Val Leu Asn Ala Glu	cgt gat gcg Arg Asp Ala	4824
1595	1600	1605	
cgg tgc tgt tcg cca ccg aca Arg Cys Cys Ser Pro Pro Thr	ccg acc cgg agc cgg Pro Thr Arg Ser Arg	agc cgg agg Ser Arg Arg	4869
1610	1615	1620	
aag acg agc cgg tcg cgg aat Lys Thr Ser Arg Ser Arg Asn	cgc ccg cgc cgg acg Arg Pro Arg Arg Thr	tcg tct cgg Ser Ser Arg	4914
1625	1630	1635	
aag ccg ccc ccg tcg cgc cgg Lys Pro Pro Pro Ser Arg Arg	ccg ctt cgt cgg cgg Pro Leu Arg Arg Arg	gcc cgc gtc Ala Arg Val	4959
1640	1645	1650	
ccg acg atc tgg ttt tcg acg Pro Thr Ile Trp Phe Ser Thr	ccg ccg atg cca cgc Pro Pro Met Pro Arg	tgc gtg atc Cys Val Ile	5004
1655	1660	1665	
gcg ctc tcg gcc aag atg cgc Ala Leu Ser Ala Lys Met Arg	atc gac cag atc gaa Ile Asp Gln Ile Glu	gaa ctc gac Glu Leu Asp	5049
1670	1675	1680	
tcc atc gag tcc atc acc gac Ser Ile Glu Ser Ile Thr Asp	ggt gcg tcg tcg cgg Gly Ala Ser Ser Arg	cgc aac cag Arg Asn Gln	5094
1685	1690	1695	
ctg ctg gtg gac ctg ggc tcc Leu Leu Val Asp Leu Gly Ser	gag ctg aac ctc ggt Glu Leu Asn Leu Gly	gcc att gaa Ala Ile Glu	5139
1700	1705	1710	
cgg cgc cgc cga atc gga cct Arg Arg Arg Arg Ile Gly Pro	ggc cgg tct gcg ctc Gly Arg Ser Ala Leu	aca ggt gac Thr Gly Asp	5184
1715	1720	1725	
caa act ggc gcg cac cta caa Gln Thr Gly Ala His Leu Gln	cgt tac ggc cca gtg Arg Tyr Gly Pro Val	ctt tcc gac Leu Ser Asp	5229
1730	1735	1740	
gcc atc aac gac cac gtt cgc Ala Ile Asn Asp His Val Arg	acc gtc ctc gga ccg Thr Val Leu Gly Pro	tcg ggc aag Ser Gly Lys	5274

1745	1750	1755	
cgg ccc ggc gcc atc gcc gag Arg Pro Gly Ala Ile Ala Glu	cgg gtg aag aag acc Arg Val Lys Lys Thr	tgg gag ctc Trp Glu Leu	5319
1760	1765	1770	
ggt gag gct ggg cca agc atg Gly Glu Ala Gly Pro Ser Met	tca ccg tcg agg tcg Ser Pro Ser Arg Ser	cgc tgg gca Arg Trp Ala	5364
1775	1780	1785	
ccc gcg agg gca gca gcg ttc Pro Ala Arg Ala Ala Ala Phe	gcg gcg gcg cca tgg Ala Ala Ala Pro Trp	gcc acc tgc Ala Thr Cys	5409
1790	1795	1800	
acg agg gcg cgc tgg ccg atg Thr Arg Ala Arg Trp Pro Met	ccg cct ccg tcg aca Pro Pro Pro Ser Thr	agg tca tcg Arg Ser Ser	5454
1805	1810	1815	
acg cgg cggt tcg cat cggt tgg Thr Arg Arg Ser His Arg Trp	ccg cgg cca ggg cgt Pro Arg Pro Gly Arg	ttc ggt agc Phe Gly Ser	5499
1820	1825	1830	
gct gcg tcg gcc ggt agt ggc Ala Ala Ser Ala Gly Ser Gly	ggc gcc acc atc gac Gly Ala Thr Ile Asp	gcg gcc gcg Ala Ala Ala	5544
1835	1840	1845	
ctc agc gag ttc acc gac caa Leu Ser Glu Phe Thr Asp Gln	atc acc ggc cgt gag Ile Thr Gly Arg Glu	ggc gtg ctg Gly Val Leu	5589
1850	1855	1860	
cct ccg cggt ccc gcc tgg tgc Pro Pro Arg Pro Ala Trp Cys	tgg ggc agc tgg gac Trp Gly Ser Trp Asp	tgg acg acc Trp Thr Thr	5634
1865	1870	1875	
cca tca acc gtt gcc ggc cgc Pro Ser Thr Val Ala Gly Arg	ccc gat tcc gag ctg Pro Asp Ser Glu Leu	atc gac ttg Ile Asp Leu	5679
1880	1885	1890	
gtc acc gcc gaa ctg gga cgg Val Thr Ala Glu Leu Gly Arg	act ggc cgc ggt tgg Thr Gly Arg Gly Trp	tgg cac cgg Trp His Arg	5724
1895	1900	1905	
tgt tcg acc cca aga agg ccg Cys Ser Thr Pro Arg Arg Pro	tcg tat tcg acg acc Ser Tyr Ser Thr Thr	gct ggc cag Ala Gly Gln	5769
1910	1915	1920	
cgc ccg cga gga cct ggt gaa Arg Pro Arg Gly Pro Gly Glu	gct gtg gct gac cga Ala Val Ala Asp Arg	cggt aag gac Arg Lys Asp	5814
1925	1930	1935	
cga agg cga cat cga cgc cga Arg Arg Arg His Arg Arg Arg	ctg gcc gcg ctg gcg Leu Ala Ala Leu Ala	gag cgc ttc Glu Arg Phe	5859
1940	1945	1950	
gag ggt gcc gcc acg tcg tgg Glu Gly Ala Ala Thr Ser Trp	cga ccc agg cta cct Arg Pro Arg Leu Pro	ggt ggc aag Gly Gly Lys	5904
1955	1960	1965	
gta agt cgc tcg cgc ggg ccg Val Ser Arg Ser Arg Gly Pro	gca gat cca tgc atc Ala Asp Pro Cys Ile	gct gta cgg Ala Val Arg	5949

1970	1975	1980	
ccg cat gcc gcc ggc gcc gag Pro His Ala Ala Gly Ala Glu 1985	aac ccc gaa ccc cgc gta cgg cgg Asn Pro Glu Pro Arg Val Arg Arg 1990	1995	5994
cga agt tgc cgt ggt gac cgg Arg Ser Cys Arg Gly Asp Arg 2000	cgc ttc gaa ggg ttc gat cgc cgc Arg Phe Glu Gly Phe Asp Arg Arg 2005	2010	6039
gtc ggt ggt ggc tcg gct gct Val Gly Gly Ser Ala Ala Arg Arg 2015	cga cgc gga gcc acc gtc atc gcg Arg Arg Gly Ala Thr Val Ile Ala 2020	2025	6084
acc acc tcc aag ctc gac gag Thr Thr Ser Lys Leu Asp Glu 2030	gag cgg ctg cgg ttc tac cgc acg Glu Arg Leu Arg Phe Tyr Arg Thr 2035	2040	6129
ctg tat cgc gac cac gcc cgt Leu Tyr Arg Asp His Ala Arg 2045	tac ggc gcg gcg ctg tgg ctg gtc Tyr Gly Ala Ala Leu Trp Leu Val 2050	2055	6174
gcf gcf aac atg gcf tcc tac Ala Ala Asn Met Ala Ser Tyr 2060	tcc gac gtc gac gcc ctg gtc gaa Ser Asp Val Asp Ala Leu Val Glu 2065	2070	6219
tgg atc ggc acc gaa cag acc Trp Ile Gly Thr Glu Gln Thr 2075	gaa agc ctt ggg ccg cag tcg att Glu Ser Leu Gly Pro Gln Ser Ile 2080	2085	6264
cac atc aaa gac gcf cag acc His Ile Lys Asp Ala Gln Thr 2090	ccg acg ctg ctg ttc cgt tcg cgg Pro Thr Leu Leu Phe Arg Ser Arg 2095	2100	6309
cgc acg cgt gtc ggg act gtc Arg Thr Arg Val Gly Thr Val 2105	gga ggc cgg ttc gcg cgc cga gat Gly Gly Arg Phe Ala Arg Arg Asp 2110	2115	6354
gga gat gaa agt gct gct gtg Gly Asp Glu Ser Ala Ala Val 2120	gcf gtg caa cgg ctg atc ggc ggc Ala Val Gln Arg Leu Ile Gly Gly 2125	2130	6399
ctg tcg acg atc ggc gcc gaa Leu Ser Thr Ile Gly Ala Glu 2135	cgc gac atg ccg tcg cgg ctc gag Arg Asp Met Pro Ser Arg Leu Glu 2140	2145	6444
cgt ggt gct gcc cgg ctc gcc Arg Gly Ala Ala Arg Leu Ala 2150	caa ccg tgg cat gtt cgg cgg cga Gln Pro Trp His Val Arg Arg Arg 2155	2160	6489
ccg gcc cta cgg cga agc caa Arg Ala Leu Arg Arg Ser Gln 2165	gtc cgc gct gga tgc cgt ggt gac Val Arg Ala Gly Cys Arg Gly Asp 2170	2175	6534
gcf ctg gca cgc cga gtc gtc Ala Leu Ala Arg Arg Val Val 2180	ctg ggc ggc acg ggt cag cct ggc Leu Gly Gly Thr Gly Gln Pro Gly 2185	2190	6579
gca cgc gct cat cgg ctg gac Ala Arg Ala His Arg Leu Asp 2195	ccg cgg cac cgg gct gat ggg cca Pro Arg His Arg Ala Asp Gly Pro 2200	2205	6624

2195	2200	2205	
caa cga tgc cat cgt ggc cgc Gln Arg Cys His Arg Gly Arg Arg Arg Arg Gly Arg 2210	cgt cga aga ggc cg ^g ggt cac cac Arg Arg Arg Arg Gly Arg Gly His His 2215	2220	6669
cta ctc gac cga cga gat ggc Leu Leu Asp Arg Arg Asp Gly 2225	g ^c gct gct cga cct gtg tca Ala Ala Ala Ala Arg Pro Val Ser 2230	2235	6714
tgc gga atc caa ggt ggc tgc Cys Gly Ile Gln Gly Gly Cys 2240	g ^g cgt tcg cc ^g atc aag gcc gac Gly Arg Ser Pro Ile Lys Ala Asp 2245	2250	6759
ctg acc ggg ggc ctg cc ^g agg Leu Thr Gly Gly Leu Pro Arg 2255	cca acc tcg aca tgg cc ^g agc tgg Pro Thr Ser Thr Trp Pro Ser Trp 2260	2265	6804
cg ^g cca agg cgc gc ^g agc aga Arg Pro Arg Arg Ala Ser Arg 2270	tgt cgg cag cc ^g cc ^g cc ^g cc ^g cc ^g Cys Arg Gln Arg Arg Pro Ser Thr 2275	2280	6849
agg acg cc ^g agg ccc ctg gc ^g Arg Thr Pro Arg Pro Leu Ala 2285	cca tcg cc ^g cc ^g tgc cgt cgc cgc Pro Ser Pro Arg Cys Arg Arg Arg 2290	2295	6894
ccc ggt ttc acc ccc gca cc ^g Pro Gly Phe Thr Pro Ala Pro 2300	cc ^g cc ^g caa tgg gac gac ctc gat Pro Pro Gln Trp Asp Asp Leu Asp 2305	2310	6939
gtc gac cc ^g gcc gac ctg gt ^g Val Asp Pro Ala Asp Leu Val 2315	gt ^g atc gtc ggc ggc cc ^g gaa atc Val Ile Val Gly Gly Arg Glu Ile 2320	2325	6984
ggc cc ^g tac ggc tc ^g tca cgc Gly Pro Tyr Gly Ser Ser Arg 2330	acc cc ^g ttc gag atg gag gtc gaa Thr Arg Phe Glu Met Glu Val Glu 2335	2340	7029
aac gag ctg tc ^g gc ^g gc ^g Asn Glu Leu Ser Ala Ala Gly 2345	gt ^g ctg gag ctg gcc tgg acc act Val Leu Glu Leu Ala Trp Thr Thr 2350	2355	7074
ggg ttg atc gct ggg aga cga Gly Leu Ile Ala Gly Arg Arg 2360	cc ^g gca acc cc ^g ttg gta cga cac Pro Ala Thr Arg Leu Val Arg His 2365	2370	7119
cga atc cc ^g cga aat ggt cga Arg Ile Arg Arg Asn Gly Arg 2375	cga atc cga gtt ggt gca gc ^g cta Arg Ile Arg Val Gly Ala Ala Leu 2380	2385	7164
cac gac gcc gt ^g gt ^g cag cgc His Asp Ala Val Val Gln Arg 2390	gt ^g ggc att cc ^g gaa ttc gtt gat Val Gly Ile Arg Glu Phe Val Asp 2395	2400	7209
gac ggc g ^c atc gac ccc gac Asp Gly Ala Ile Asp Pro Asp 2405	cac gcc tc ^g cc ^g ctg ctg ctg gtg tc ^g His Ala Ser Pro Leu Leu Val Ser 2410	2415	7254
gt ^g ttc ctg gag aag gac ttc Val Phe Leu Glu Lys Asp Phe 2415	gc ^g ttc gt ^g gt ^g tcc tc ^g gag gcc Ala Phe Val Val Ser Ser Glu Ala 2420	2425	7299

2420	2425	2430	
gat gcg cgc gcc ttc gtc gag Asp Ala Arg Ala Phe Val Glu 2435	ttc gat ccc gag cac Phe Asp Pro Glu His 2440	acg gtc atc Thr Val Ile 2445	7344
cgg ccg gtg ccc gac tcc acc Arg Pro Val Pro Asp Ser Thr 2450	gac tgg cag gtc atc Asp Trp Gln Val Ile 2455	cgc aag gcc Arg Lys Ala 2460	7389
ggc acc gag atc cgg gtg ccg Gly Thr Glu Ile Arg Val Pro 2465	cga aag acc aag ctg Arg Lys Thr Lys Leu 2470	tcc cgc gtc Ser Arg Val 2475	7434
gtc ggc ggc cag atc ccg acc Val Gly Gly Gln Ile Pro Thr 2480	ggg ttc gac ccg acg Gly Phe Asp Pro Thr 2485	gtg tgg ggc Val Trp Gly 2490	7479
atc agc gca gac atg gcc ggt Ile Ser Ala Asp Met Ala Gly 2495	tcc atc gac ccg ttg Ser Ile Asp Arg Leu 2500	gcg gta tgg Ala Val Trp 2505	7524
aac atg tgg cgg acc gtc gac Asn Met Trp Arg Thr Val Asp 2510	cgg ttc ctg tcg tcc Arg Phe Leu Ser Ser 2515	ggt ttc agc Gly Phe Ser 2520	7569
ccg gcc gag gtg atg cgt tac Pro Ala Glu Val Met Arg Tyr 2525	gtg cac ccg agt ttg Val His Pro Ser Leu 2530	gtg gcc aac Val Ala Asn 2535	7614
acc cag ggc acc ggc atg ggc Thr Gln Gly Thr Gly Met Gly 2540	ggc ggc acg tcg atg Gly Gly Thr Ser Met 2545	cag acg atg Gln Thr Met 2550	7659
tac cac ggc aat ctg ttg ggc Tyr His Gly Asn Leu Leu Gly 2555	cgc aac aag ccg aac Arg Asn Lys Pro Asn 2560	gac atc ttc Asp Ile Phe 2565	7704
cag gaa gtc ttg ccg ata tca Gln Glu Val Leu Pro Ile Ser 2570	ttc gcc gcg cac gtg Phe Ala Ala His Val 2575	gtt cag tcc Val Gln Ser 2580	7749
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gcc acc gcc gcg gtg tcg gtc Ala Thr Ala Ala Val Ser Val 2600	gag gaa ggt gtc gac Glu Glu Gly Val Asp 2605	aag atc cgg Lys Ile Arg 2610	7839
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ctg gag ggc atc atc gga ttc Leu Glu Gly Ile Ile Gly Phe 2630	ggt gac atg gcc gcc Gly Asp Met Ala Ala 2635	acc gcc gac Thr Ala Asp 2640	7929
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2645	2650	2655	
cg ^g cc ^c aa ^c ga ^c cg ^c cg ^c cgt	ct ^g g ^c t ^c g ^c tc ^g aag	cc ^c a ^a g ^a gc ^g	8019
Arg Pro Asn Asp Arg Arg Arg	Leu Ala Ser Ser Lys	Pro Lys Ala	
2660	2665	2670	
gc ^g gg ^a cg ^a tc ^c tg ^t tg ^g gc ^g	cg ^g gg ^a ct ^c gg ^c g ^c g ^t	gc ^g ga ^t gg ^g	8064
Ala Gly Arg Ser Cys Trp Ala	Arg Gly Pro Gly Ala	Ala Asp Gly	
2675	2680	2685	
g ^c g ^c gg ^t g ^c gg ^c gg ^t gg ^t	gg ^g tt ^c g ^c ca ^g tc ^g tt ^c gg ^c ga ^c		8109
Ala Ala Gly Ala Gly Gly	Gly Phe Ala Gln Ser Phe Gly Asp		
2690	2695	2700	
gg ^c gt ^g ca ^c ac ^c tc ^g at ^c cg ^c	cc ^c gg ^g ct ^c gg ^g cg ^c g ^c tt ^c gg ^c ga ^c		8154
Gly Val His Thr Ser Ile Arg	Pro Gly Pro Gly Arg	Ala Gly Gly	
2705	2710	2715	
gg ^c gc ^g cg ^g cg ^g ca ^a gg ^a tt ^c	ag ^c tg ^c gg ^c gg ^c cg ^c tt ^g cc ^a ag ^c		8199
Gly Ala Arg Arg Gln Gly Phe	Ser Cys Gly Gly Arg	Trp Pro Ser	
2720	2725	2730	
tg ^c gt ^g gc ^c gc ^c ga ^c ga ^c gt ^g	gc ^g gt ^c at ^c tc ^c aag	ca ^c ga ^c ac ^c	8244
Cys Val Ala Ala Asp Asp Val	Ala Val Ile Ser Lys	His Asp Thr	
2735	2740	2745	
tc ^g ac ^g ct ^g gg ^c aa ^c ga ^t cc ^c	aa ^c ga ^g ac ^c ga ^g tt ^g	ca ^t ga ^a cg ^g	8289
Ser Thr Leu Ala Asn Asp Pro	Asn Glu Thr Glu Leu	His Glu Arg	
2750	2755	2760	
ct ^c gg ^c ga ^c gg ^c ct ^g gg ^c cgt	tt ^c ga ^g gg ^c gg ^c cc ^c	ct ^g tt ^c gt ^g	8334
Leu Ala Asp Ala Leu Gly Arg	Ser Glu Gly Ala Pro	Leu Phe Val	
2765	2770	2775	
gt ^g tc ^g ca ^g aa ^g ag ^c ct ^g ac ^c	gg ^c ca ^g cc ^a ag ^g gc ^g	gc ^g cg ^g cg ^g	8379
Val Ser Gln Lys Ser Leu Thr	Gly Gln Pro Arg Ala	Ala Arg Arg	
2780	2785	2790	
t ^c t ^c ag ^a t ^g Ser Ser Arg			8391
2795			

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Pro Asp Val Gly Arg Arg Val Gly Ala Arg Arg Val Ala Tyr Pro Asp
20 25 30

Arg Gly Asp Pro Gly Ala Gly Pro Ser Arg His Gly Pro Arg Gly His
35 40 45

Pro Ala Gly Arg His Gly Gly His Ser Gln Gly Val Leu Ala Val Glu
50 55 60

Ala Leu Lys Ala Gly Gly Ala Arg Asp Val Glu Leu Phe Ala Leu Ala
65 70 75 80

Gln Leu Ile Gly Ala Ala Gly Thr Leu Val Ala Arg Arg Arg Glu Phe
85 90 95

Pro Ser Trp Ala Ile Ala Pro Met Val Ser Val Thr Asn Ala Asp Pro
100 105 110

Glu Arg Ile Gly Arg Leu Leu Asp Glu Phe Ala Gln Asp Val Arg Thr
115 120 125

Val Leu Pro Pro Val Leu Ser Ile Arg Asn Gly Arg Arg Ala Val Val
130 135 140

Ile Thr Gly Thr Pro Glu Gln Leu Ser Arg Phe Glu Leu Tyr Cys Arg
145 150 155 160

Gln Ile Ser Glu Lys Glu Glu Ala Asp Arg Lys Asn Lys Val Arg Gly
165 170 175

Gly Asp Val Phe Ser Pro Val Phe Glu Pro Val Gln Val Glu Val Gly
180 185 190

Phe His Thr Pro Arg Leu Ser Asp Gly Ile Asp Ile Val Ala Gly Trp
195 200 205

Ala Glu Lys Ala Gly Leu Asp Val Ala Leu Ala Arg Glu Leu Ala Asp
210 215 220

Ala Ile Leu Ile Arg Lys Val Asp Trp Val Asp Glu Ile Thr Arg Val
225 230 235 240

His Arg Ala Gly Ala Arg Trp Ile Leu Asp Leu Gly Pro Gly Asp Ile
245 250 255

Leu Thr Arg Leu Thr Ala Pro Val Ile Arg Gly Leu Gly Ile Gly Ile
260 265 270

Val Pro Ala Arg Thr Arg Gly Gly Gln Arg Asn Leu Phe Thr Val Gly
275 280 285

Ala Thr Pro Glu Val Ala Arg Ala Trp Ser Ser Tyr Ala Pro Thr Val
290 295 300

Val Arg Leu Pro Asp Gly Arg Val Lys Leu Ser Thr Lys Phe Thr Arg
305 310 315 320

Leu Thr Arg Arg Ser Pro Ile Leu Leu Ala Gly Met Thr Pro Thr Thr
325 330 335

Val Asp Ala Lys Ile Val Ala Ala Ala Asn Gly Arg His Trp Ala
340 345 350

Glu Leu Ala Ala Arg Gly Arg Ser Pro Lys Arg Ser Ser Val Thr Ala
355 360 365

Ser Asn Lys Trp Pro Ala Cys Ser Ser Arg Ala Ala Pro Ile Ser Ser
370 375 380

Thr Arg Cys Ser Ser Ile Pro Thr Cys Glu Ala Ser Gly Gly Arg Gln
385 390 395 400

Ala Val Gly Ala Glu Gly Pro Pro Val Arg Arg Asp Arg Arg Arg
405 410 415

Gly Asp Gln Arg Arg His Pro Arg Pro Arg Arg Gly Arg Arg Ala Asp
420 425 430

Arg Arg Thr Gly Arg His Arg His Gln Pro Arg Arg Val Gln Thr Arg
435 440 445

Asp His Arg Ala Asp Pro Leu Gly Asp Ser His Arg His Arg Gly Ala
450 455 460

His Gln Ala Gly Asp His Ala Arg Arg Gly Pro Gly Ala Pro Ala Gly
465 470 475 480

Thr Ile Pro Gly Arg Ile Ser His Leu Leu Leu Ala Thr Tyr Ser Ala
485 490 495

Asp Arg Ala Pro Arg Gln His His Val Cys Val Gly Gly His Leu
500 505 510

Gly Thr Pro Lys Lys Gly Cys Gly Tyr Leu Ser Gly Pro Gly Arg Ser
515 520 525

Val Arg Leu Pro Ile Asp Ala Asp Arg Arg Ile Leu Val Gly Thr Ala
530 535 540

Ala Met Ala Thr Lys Glu Ser Thr Thr Ser Pro Ser Val Lys Arg Met
545 550 555 560

Leu Val Asp Thr Gln Gly Thr Asp Gln Trp Ile Ser Ala Gly Lys Ala
565 570 575

Gln Gly Arg Met Pro Pro Ala Glu Ser Ala Arg Cys Arg His Pro Arg
580 585 590

Asp Arg His Ser Ala Ser Val Arg Arg Cys Ser Thr Arg Trp Pro Val
595 600 605

Thr Arg Arg Arg Ser Arg Ser Val Ala Trp Pro Arg Pro Pro Ser Pro
610 615 620

Thr Cys Arg Arg Arg His Asp Leu Pro Ala Val Ala Ala Gly Ala
625 630 635 640

Thr Ser Asn Trp Pro Ser Gly Lys Ala Thr Arg Pro Pro Thr Pro Pro
645 650 655

Arg Trp Ala Ala Arg Gly Trp Pro Thr Leu Ala Gly Pro Leu Arg Ala
660 665 670

Asp Ala Ala Ala Cys Arg Ser Pro Val Ala Pro Thr Gly Phe Arg Pro
675 680 685

Asp Pro Asp Ala Ile His Arg Cys Trp Pro Ala Gly Gln Ser Ala Ala
690 695 700

Ala Ile Ala Ala Leu Val Ala Arg Tyr Pro Asp Ala Glu Thr Val Gln
705 710 715 720

Leu His Pro Ala Asp Val Pro Phe Phe Val Thr Leu Cys Lys Thr Leu
725 730 735

Gly Lys Pro Val Asn Phe Val Pro Ala Ile Asp Leu Val Val Arg Ala
740 745 750

Gly Gly Ala Ala Thr Arg Cys Gly Arg Pro Thr Thr Pro Ala Thr Thr
755 760 765

Pro Met Arg Cys Ala Ser Phe Arg Ala Arg Val Gly Ser Arg Ile Thr
770 775 780

Arg Met Asp Glu Pro Val Gly Glu Leu Leu Asp Ala Phe Glu Gln Ala
785 790 795 800

Ala Ile Asp Glu Val Leu Gly Ala Gly Val Glu Pro Lys Asp Val Ala
805 810 815

Ser Gly Arg Leu Gly Arg Ala Asp Val Ala Gly Pro Leu Ala Val Val
820 825 830

Leu Asp Ala Pro Asp Val Arg Trp Ala Gly Arg Thr Val Thr Asn Pro
835 840 845

Val His Arg Ile Arg Asp Pro Ala Glu Trp Gln Val His Asp Gly Pro
850 855 860

Glu Asn Pro Arg Ala Ala His Ser Ser Thr Gly Ala Arg Leu Gln Thr
865 870 875 880

His Gly Asp Asp Val Ala Leu Ser Val Ala Arg Leu Gly His Leu Gly
885 890 895

Arg His Pro Ile His Val Ala Gly Gln His Arg Arg Trp Arg His Pro
900 905 910

Gly Asp Arg His Arg Gly Arg His His Ala Met Arg Thr Val Leu Arg
915 920 925

Ser Pro Pro Val Ser Thr Ala Arg Ser Ser Cys Cys Gly Gly Gln Arg
930 935 940

Asp Gly His Phe Asp Gly Gly Leu Ala Pro Arg Ala Cys Cys Arg Pro
945 950 955 960

His Arg His Arg His Val Arg Cys Ala Leu Ala Pro Ser Leu Thr Asn
965 970 975

Val Pro Thr Arg Leu Val Gly Pro Cys Trp Pro Ala Val Phe Ala Ala
980 985 990

Ile Gly Ser Ala Val Thr Asp Thr Gly Glu Pro Val Val Glu Gly Leu
995 1000 1005

Leu Ser Leu Val His Leu Asp Thr Arg Pro Arg Val Val Gly Gln
1010 1015 1020

Leu Pro Thr Val Pro Ala Gln Leu Thr Val Thr Gln Arg Leu Pro
1025 1030 1035

Thr Gln Pro Ile Arg Thr Trp Ala Ala Ser Cys Arg Ser Arg Ser
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Ser Phe Thr Ala Trp Arg Arg Asp Arg His Ser Arg Gly Ala Ile
1055 1060 1065

Arg Asp Pro Gly Ser His Arg Phe Ala Glu Leu Asp Arg Arg Glu
1070 1075 1080

Pro Val Ala Arg Cys Arg Glu Arg His Arg His Pro Ala Arg Arg
1085 1090 1095

Arg Arg Asp Val Thr Ile Thr Ala Pro Val Asp Met Arg Pro Phe
1100 1105 1110

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Gly Met Val Ala Pro Ala Thr Arg Trp Thr Ser Gly Arg Ala Arg
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Gly Ser Asp Leu Val Met Ser Ala Ser Ala Arg Leu Ala Ala Pro
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Lys Thr Val Tyr Ala Phe Pro Gly Gln Gly Ile Gln His Lys Gly
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Met Gly Met Glu Val Arg Ala Ala Pro Arg Arg Pro Ala Arg Cys
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Tyr Cys Thr Trp Ser Ala Thr Thr Arg Pro Ala Ser Ser Pro Ala
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Val Cys Thr Thr Thr Asp Gly Val Leu Tyr Leu Thr Gln Phe
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Thr Gln Val Ala Met Ala Thr Val Ala Ala Gly Gln Val Ala Glu
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Met Arg Glu Gln Gly Ala Phe Val Glu Gly Ala Ile Ala Cys Gly
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His Ser Val Gly Glu Tyr Thr Ala Leu Ala Cys Val Thr Gly Ile
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Tyr Gln Leu Glu Ala Leu Leu Glu Met Val Phe His Arg Gly Ser
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Lys Met His Asp Ile Val Pro Arg Asp Glu Leu Gly Arg Ser Asn
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Tyr Arg Leu Ser Ala Ile Arg Pro Ser Gln Ile Asp Leu Asp Asp
1370 1375 1380

Ala Asp Val Pro Ala Phe Val Ala Gly Ile Ala Glu Ser Thr Gly
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Glu Phe Leu Glu Ile Glu Asn Phe Asn Leu Gly Gly Ser Gln Tyr
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Ala Ile Ala Gly Thr Val Arg Gly Leu Glu Ala Leu Glu Ala Glu
1415 1420 1425

Val Glu Arg Arg Arg Glu Leu Thr Gly Gly Arg Arg Ser Phe Ile
1430 1435 1440

Leu Val Pro Gly Ile Asp Val Pro Phe His Ser Arg Val Leu Arg
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Val Gly Val Ala Glu Phe Arg Arg Ser Leu Asp Arg Val Met Arg
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Pro Thr Arg Thr Arg Pro Asp His Arg Ala Leu His Ser Gln Pro
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Ser Gly Ile Trp Cys Pro Ala Glu Pro Leu Asp Glu Ile Leu Ala
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Asp Tyr Asp Thr Trp Leu Arg Asp Asp Arg Arg Asp Gly Ala His
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Gly Val His Arg Ala Ala Gly Met Ala Ile Arg Gln Pro Gly Ala
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Leu Asp Arg Asp Ala Gly Ser Ala Val His Arg Gly Gly Ala Gly
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Gly Leu Gly Val Glu Arg Phe Val Glu Ile Gly Val Lys Ser Ser
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Pro Thr Val Ala Gly Ser Cys His Gln His Pro Gln Thr Ala Arg
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Ile Arg Pro Gln His Ser Glu Val Leu Asn Ala Glu Arg Asp Ala
1595 1600 1605

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Ala Leu Ser Ala Lys Met Arg Ile Asp Gln Ile Glu Glu Leu Asp
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Ala Ile Asn Asp His Val Arg Thr Val Leu Gly Pro Ser Gly Lys
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Gly Glu Ala Gly Pro Ser Met Ser Pro Ser Arg Ser Arg Trp Ala
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Pro Ala Arg Ala Ala Ala Phe Ala Ala Ala Pro Trp Ala Thr Cys
1790 1795 1800

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Thr Arg Arg Ser His Arg Trp Pro Arg Pro Gly Arg Phe Gly Ser
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Ala Ala Ser Ala Gly Ser Gly Gly Ala Thr Ile Asp Ala Ala Ala
1835 1840 1845

Leu Ser Glu Phe Thr Asp Gln Ile Thr Gly Arg Glu Gly Val Leu
1850 1855 1860

Pro Pro Arg Pro Ala Trp Cys Trp Gly Ser Trp Asp Trp Thr Thr
1865 1870 1875

Pro Ser Thr Val Ala Gly Arg Pro Asp Ser Glu Leu Ile Asp Leu
1880 1885 1890

Val Thr Ala Glu Leu Gly Arg Thr Gly Arg Gly Trp Trp His Arg
1895 1900 1905

Cys Ser Thr Pro Arg Arg Pro Ser Tyr Ser Thr Thr Ala Gly Gln
1910 1915 1920

DRAFT PROTEIN SEQUENCE - REVISED 2012

Arg Pro Arg Gly Pro Gly Glu Ala Val Ala Asp Arg Arg Lys Asp
1925 1930 1935

Arg Arg Arg His Arg Arg Arg Leu Ala Ala Leu Ala Glu Arg Phe
1940 1945 1950

Glu Gly Ala Ala Thr Ser Trp Arg Pro Arg Leu Pro Gly Gly Lys
1955 1960 1965

Val Ser Arg Ser Arg Gly Pro Ala Asp Pro Cys Ile Ala Val Arg
1970 1975 1980

Pro His Ala Ala Gly Ala Glu Asn Pro Glu Pro Arg Val Arg Arg
1985 1990 1995

Arg Ser Cys Arg Gly Asp Arg Arg Phe Glu Gly Phe Asp Arg Arg
2000 2005 2010

Val Gly Gly Gly Ser Ala Ala Arg Arg Gly Ala Thr Val Ile Ala
2015 2020 2025

Thr Thr Ser Lys Leu Asp Glu Glu Arg Leu Arg Phe Tyr Arg Thr
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Leu Tyr Arg Asp His Ala Arg Tyr Gly Ala Ala Leu Trp Leu Val
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Ala Ala Asn Met Ala Ser Tyr Ser Asp Val Asp Ala Leu Val Glu
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Trp Ile Gly Thr Glu Gln Thr Glu Ser Leu Gly Pro Gln Ser Ile
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His Ile Lys Asp Ala Gln Thr Pro Thr Leu Leu Phe Arg Ser Arg
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His Asp Ala Val Val Gln Arg Val Gly Ile Arg Glu Phe Val Asp
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Ala Thr Ala Ala Val Ser Val Glu Glu Gly Val Asp Lys Ile Arg
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Leu Gly Arg Leu Asn Trp Trp Ser Ala Ala Val Asp Asp Leu Thr
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Leu Glu Gly Ile Ile Gly Phe Gly Asp Met Ala Ala Thr Ala Asp
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Thr Ser Met Met Arg Gly Arg Gly Ile His Asp Ser Lys Phe Ser
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Arg Pro Asn Asp Arg Arg Arg Leu Ala Ser Ser Lys Pro Lys Ala
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Ala Gly Arg Ser Cys Trp Ala Arg Gly Pro Gly Ala Ala Asp Gly
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Ala Ala Gly Ala Gly Gly Gly Phe Ala Gln Ser Phe Gly Asp
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Gly Val His Thr Ser Ile Arg Pro Gly Pro Gly Arg Ala Gly Gly
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Gly Ala Arg Arg Gln Gly Phe Ser Cys Gly Gly Arg Trp Pro Ser
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Cys Val Ala Ala Asp Asp Val Ala Val Ile Ser Lys His Asp Thr
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Ser Thr Leu Ala Asn Asp Pro Asn Glu Thr Glu Leu His Glu Arg
2750 2755 2760

Leu Ala Asp Ala Leu Gly Arg Ser Glu Gly Ala Pro Leu Phe Val
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 Val Ala Asp Phe Gly Leu Ser Arg Leu Met Thr Gly Asp Thr Tyr Thr
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gcc cat gct gga gcc aag ttc ccc atc aaa tgg act gca ccc gag agc 144
 Ala His Ala Gly Ala Lys Phe Pro Ile Lys Trp Thr Ala Pro Glu Ser
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 Gly Phe Leu Leu Ala Leu Pro Pro Gly Ile Ala Gly Thr Gln Val
 15 20 25

tgt acc ggc aca gac atg aag ttg cgg ctc cct gcc agt cct gag acc 148
 Cys Thr Gly Thr Asp Met Lys Leu Arg Leu Pro Ala Ser Pro Glu Thr
 30 35 40

cac ctg gac atg ctc cgc cac ctg tac cag ggc tgt cag gta gtg cag 196
 His Leu Asp Met Leu Arg His Leu Tyr Gln Gly Cys Gln Val Val Gln
 45 50 55 60

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 Gly Asn Leu Glu Leu Thr Tyr Val Pro Ala Asn Ala Ser Leu Ser Phe
 65 70 75

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cag gtg aag cgc gtc cca ctg caa agg ctg cgc atc gtg aga ggg acc Gln Val Lys Arg Val Pro Leu Gln Arg Leu Arg Ile Val Arg Gly Thr 95 100 105	340
cag ctc ttt gag gac aag tat gcc ctg gct gtg cta gac aac cga gat Gln Leu Phe Glu Asp Lys Tyr Ala Leu Ala Val Leu Asp Asn Arg Asp 110 115 120	388
cct cag gac aat gtc gcc gcc tcc acc cca ggc aga acc cca gag ggg Pro Gln Asp Asn Val Ala Ala Ser Thr Pro Gly Arg Thr Pro Glu Gly 125 130 135 140	436
ctg cgg gag ctg cag ctt cga agt ctc aca gag atc ctg aag gga gga Leu Arg Glu Leu Gln Leu Arg Ser Leu Thr Glu Ile Leu Lys Gly Gly 145 150 155	484
gtt ttg atc cgt ggg aac cct cag ctc tgc tac cag gac atg gtt ttg Val Leu Ile Arg Gly Asn Pro Gln Leu Cys Tyr Gln Asp Met Val Leu 160 165 170	532
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ggc acc atc tgt acc agt ggt tgt gcc cgg tgc aag ggc cgg ctg ccc Gly Thr Ile Cys Thr Ser Gly Cys Ala Arg Cys Lys Gly Arg Leu Pro 225 230 235	724
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Arg Glu Tyr Val Ser Asp Lys Arg Cys Leu Pro Cys His Pro Glu Cys	
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His Ser Cys Val Asp Leu Asp Glu Arg Gly Cys Pro Ala Glu Gln Arg	
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Gln Lys Ile Arg Lys Tyr Thr Met Arg Arg Leu Leu Gln Glu Thr Glu	
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370 375 380

Phe Asp Gly Asp Pro Ser Ser Gly Ile Ala Pro Leu Arg Pro Glu Gln
385 390 395 400

Leu Gln Val Phe Glu Thr Leu Glu Glu Ile Thr Gly Tyr Leu Tyr Ile
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Val	His	Thr	Val	Pro	Trp	Asp	Gln	Leu	Phe	Arg	Asn	Pro	His	Gln	Ala
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Cys	Val	Glu	Glu	Cys	Arg	Val	Trp	Lys	Gly	Leu	Pro	Arg	Glu	Tyr	Val
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Asp	Leu	Asp	Glu	Arg	Gly	Cys	Pro	Ala	Glu	Gln	Arg	Ala	Ser	Pro	Val
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660															665
Thr	Phe	Ile	Ile	Ala	Thr	Val	Glu	Gly	Val	Leu	Leu	Phe	Leu	Ile	Leu
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Val	Val	Val	Val	Gly	Ile	Leu	Ile	Lys	Arg	Arg	Arg	Gln	Lys	Ile	Arg

D D E P P E E E P P D D E E E P P E E E P P E E

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690 695 700

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705 710 715 720

Lys Glu Thr Glu Leu Arg Lys Val Lys Val Leu Gly Ser Gly Ala Phe
725 730 735

Gly Thr Val Tyr Lys Gly Ile Trp Ile Pro Asp Gly Glu Asn Val Lys
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Ile Pro Val Ala Ile Lys Val Leu Arg Glu Asn Thr Ser Pro Lys Ala
755 760 765

Asn Lys Glu Ile Leu Asp Glu Ala Tyr Val Met Ala Gly Val Gly Ser
770 775 780

Pro Tyr Val Ser Arg Leu Leu Gly Ile Cys Leu Thr Ser Thr Val Gln
785 790 795 800

Leu Val Thr Gln Leu Met Pro Tyr Gly Cys Leu Leu Asp His Val Arg
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Glu His Arg Gly Arg Leu Gly Ser Gln Asp Leu Leu Asn Trp Cys Val
820 825 830

Gln Ile Ala Lys Gly Met Ser Tyr Leu Glu Asp Val Arg Leu Val His
835 840 845

Arg Asp Leu Ala Ala Arg Asn Val Leu Val Lys Ser Pro Asn His Val
850 855 860

Lys Ile Thr Asp Phe Gly Leu Ala Arg Leu Leu Asp Ile Asp Glu Thr
865 870 875 880

Glu Tyr His Ala Asp Gly Gly Lys Val Pro Ile Lys Trp Met Ala Leu
885 890 895

Glu Ser Ile Leu Arg Arg Arg Phe Thr His Gln Ser Asp Val Trp Ser
900 905 910

Tyr Gly Val Thr Val Trp Glu Leu Met Thr Phe Gly Ala Lys Pro Tyr

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Asp Gly Ile Pro Ala Arg Glu Ile Pro Asp Leu Leu Glu Lys Gly Glu
930 935 940

Arg Leu Pro Gln Pro Pro Ile Cys Thr Ile Asp Val Tyr Met Ile Met
945 950 955 960

Val Lys Cys Trp Met Ile Asp Ser Glu Cys Arg Pro Arg Phe Arg Glu
965 970 975

Leu Val Ser Glu Phe Ser Arg Met Ala Arg Asp Pro Gln Arg Phe Val
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Val Ile Gln Asn Glu Asp Leu Gly Pro Ser Ser Pro Met Asp Ser Thr
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Phe Tyr Arg Ser Leu Leu Glu Asp Asp Asp Met Gly Asp Leu Val
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Asp Ala Glu Glu Tyr Leu Val Pro Gln Gln Gly Phe Phe Ser Pro
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Asp Pro Thr Pro Gly Thr Gly Ser Thr Ala His Arg Arg His Arg
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Ser Ser Ser Thr Arg Ser Gly Gly Gly Glu Leu Thr Leu Gly Leu
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Glu Pro Ser Glu Glu Gly Pro Pro Arg Ser Pro Leu Ala Pro Ser
1070 1075 1080

Glu Gly Ala Gly Ser Asp Val Phe Asp Gly Asp Leu Ala Met Gly
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Val Thr Lys Gly Leu Gln Ser Leu Ser Pro His Asp Leu Ser Pro
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Leu Gln Arg Tyr Ser Glu Asp Pro Thr Leu Pro Leu Pro Pro Glu
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Thr Asp Gly Tyr Val Ala Pro Leu Ala Cys Ser Pro Gln Pro Glu
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Tyr Val Asn Gln Ser Glu Val Gln Pro Gln Pro Pro Leu Thr Pro

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Arg Pro Lys Thr Leu Ser Pro Gly Lys Asn Gly Val Val Lys Asp			
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Val Phe Ala Phe Gly Gly Ala Val Glu Asn Pro Glu Tyr Leu Val			
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Pro Arg Glu Gly Thr Ala Ser Pro Pro His Pro Ser Pro Ala Phe			
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Ser Pro Ala Phe Asp Asn Leu Tyr Tyr Trp Asp Gln Asn Ser Ser			
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Ser Gly Gly Ser Pro Thr Ser Leu Trp Gly Leu Leu Phe Leu Ser			
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gcc gcg ctc tcg ctc tgg ccg acg agt gga gaa atc tgc ggg cca ggc			153
Ala Ala Leu Ser Leu Trp Pro Thr Ser Gly Glu Ile Cys Gly Pro Gly			
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atc gac atc cgc aac gac tat cag cag ctg aag cgc ctg gag aac tgc			201
Ile Asp Ile Arg Asn Asp Tyr Gln Gln Leu Lys Arg Leu Glu Asn Cys			
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acg gtg atc gag ggc tac ctc cac atc ctg ctc atc tcc aag gcc gag			249
Thr Val Ile Glu Gly Tyr Leu His Ile Leu Ile Ser Lys Ala Glu			
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gac tac cgc agc tac cgc ttc ccc aag ctc acg gtc att acc gag tac			297
Asp Tyr Arg Ser Tyr Arg Phe Pro Lys Leu Thr Val Ile Thr Glu Tyr			
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ttg ctg ctg ttc cga gtg gct ggc ctc gag agc ctc gga gac ctc ttc			345

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ccc aac ctc acg gtc atc cgc ggc tgg aaa ctc ttc tac aac tac gcc	105 110 115	393
Pro Asn Leu Thr Val Ile Arg Gly Trp Lys Leu Phe Tyr Asn Tyr Ala		
ctg gtc atc ttc gag atg acc aat ctc aag gat att ggg ctt tac aac	120 125 130	441
Leu Val Ile Phe Glu Met Thr Asn Leu Lys Asp Ile Gly Leu Tyr Asn		
ctg agg aac att act cgg ggg gcc atc agg att gag aaa aat gct gac	135 140 145	489
Leu Arg Asn Ile Thr Arg Gly Ala Ile Arg Ile Glu Lys Asn Ala Asp		
ctc tgt tac ctc tcc act gtg gac tgg tcc ctg atc ctg gat gcg gtg	150 155 160	537
Leu Cys Tyr Leu Ser Thr Val Asp Trp Ser Leu Ile Leu Asp Ala Val		
tcc aat aac tac att gtg ggg aat aag ccc cca aag gaa tgt ggg gac	165 170 175 180	585
Ser Asn Asn Tyr Ile Val Gly Asn Lys Pro Pro Lys Glu Cys Gly Asp		
ctg tgt cca ggg acc atg gag gag aag ccg atg tgt gag aag acc acc	185 190 195	633
Leu Cys Pro Gly Thr Met Glu Glu Lys Pro Met Cys Glu Lys Thr Thr		
atc aac aat gag tac aac tac cgc tgc tgg acc aca aac cgc tgc cag	200 205 210	681
Ile Asn Asn Glu Tyr Asn Tyr Arg Cys Trp Thr Thr Asn Arg Cys Gln		
aaa atg tgc cca agc acg tgt ggg aag cgg gcg tgc acc gag aac aat	215 220 225	729
Lys Met Cys Pro Ser Thr Cys Gly Lys Arg Ala Cys Thr Glu Asn Asn		
gag tgc tgc cac ccc gag tgc ctg ggc agc tgc agc gcg cct gac aac	230 235 240	777
Glu Cys Cys His Pro Glu Cys Leu Gly Ser Cys Ser Ala Pro Asp Asn		
gac acg gcc tgt gta gct tgc cgc cac tac tac tat gcc ggt gtc tgt	245 250 255 260	825
Asp Thr Ala Cys Val Ala Cys Arg His Tyr Tyr Ala Gly Val Cys		
gtg cct gcc tgc ccg ccc aac acc tac agg ttt gag ggc tgg cgc tgt	265 270 275	873
Val Pro Ala Cys Pro Pro Asn Thr Tyr Arg Phe Glu Gly Trp Arg Cys		
gtg gac cgt gac ttc tgc gcc aac atc ctc agc gcc gag agc agc gac	280 285 290	921
Val Asp Arg Asp Phe Cys Ala Asn Ile Leu Ser Ala Glu Ser Ser Asp		
tcc gag ggg ttt gtg atc cac gac ggc gag tgc atg cag gag tgc ccc	295 300 305	969
Ser Glu Gly Phe Val Ile His Asp Gly Glu Cys Met Gln Glu Cys Pro		
tcg ggc ttc atc cgc aac ggc agc cag agc atg tac tgc atc cct tgt	310 315 320	1017
Ser Gly Phe Ile Arg Asn Gly Ser Gln Ser Met Tyr Cys Ile Pro Cys		
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Glu Gly Pro Cys Pro Lys Val Cys Glu Glu Glu Lys Lys Thr Lys Thr	325 330 335 340	
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aag ggc aat ttg ctc att aac atc cga cgg ggg aat aac att gct tca Lys Gly Asn Leu Leu Ile Asn Ile Arg Arg Gly Asn Asn Ile Ala Ser	360 365 370	1161
gag ctg gag aac ttc atg ggg ctc atc gag gtg gtg acg ggc tac gtg Glu Leu Glu Asn Phe Met Gly Leu Ile Glu Val Val Thr Gly Tyr Val	375 380 385	1209
aag atc cgc cat tct cat gcc ttg gtc tcc ttg tcc ttc cta aaa aac Lys Ile Arg His Ser His Ala Leu Val Ser Leu Ser Phe Leu Lys Asn	390 395 400	1257
ctt cgc ctc atc cta gga gag gag cag cta gaa ggg aat tac tcc ttc Leu Arg Leu Ile Leu Gly Glu Gln Leu Glu Gly Asn Tyr Ser Phe	405 410 415 420	1305
tac gtc ctc gac aac cag aac ttg cag caa ctg tgg gac tgg gac cac Tyr Val Leu Asp Asn Gln Asn Leu Gln Gln Leu Trp Asp Trp Asp His	425 430 435	1353
cgc aac ctg acc atc aaa gca ggg aaa atg tac ttt gct ttc aat ccc Arg Asn Leu Thr Ile Lys Ala Gly Lys Met Tyr Phe Ala Phe Asn Pro	440 445 450	1401
aaa tta tgt gtt tcc gaa att tac cgc atg gag gaa gtg acg ggg act Lys Leu Cys Val Ser Glu Ile Tyr Arg Met Glu Glu Val Thr Gly Thr	455 460 465	1449
aaa ggg cgc caa agc aaa ggg gac ata aac acc agg aac aac ggg gag Lys Gly Arg Gln Ser Lys Gly Asp Ile Asn Thr Arg Asn Asn Gly Glu	470 475 480	1497
aga gcc tcc tgt gaa agt gac gtc ctg cat ttc acc tcc acc acc acg Arg Ala Ser Cys Glu Ser Asp Val Leu His Phe Thr Ser Thr Thr Thr	485 490 495 500	1545
tcg aag aat cgc atc atc ata acc tgg cac cgg tac cgg ccc cct gac Ser Lys Asn Arg Ile Ile Ile Thr Trp His Arg Tyr Arg Pro Pro Asp	505 510 515	1593
tac agg gat ctc atc agc ttc acc gtt tac tac aag gaa gca ccc ttt Tyr Arg Asp Leu Ile Ser Phe Thr Val Tyr Tyr Lys Glu Ala Pro Phe	520 525 530	1641
aag aat gtc aca gag tat gat ggg cag gat gcc tgc ggc tcc aac agc Lys Asn Val Thr Glu Tyr Asp Gly Gln Asp Ala Cys Gly Ser Asn Ser	535 540 545	1689
tgg aac atg gtg gac gtg gac ctc ccg ccc aac aag gac gtg gag ccc Trp Asn Met Val Asp Val Asp Leu Pro Pro Asn Lys Asp Val Glu Pro	550 555 560	1737
ggc atc tta cta cat ggg ctg aag ccc tgg act cag tac gcc gtt tac		1785

Gly Ile Leu Leu His Gly Leu Lys Pro Trp Thr Gln Tyr Ala Val Tyr		
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585 590 595		
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600 605 610		
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615 620 625		
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630 635 640		
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680 685 690		
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695 700 705		
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745 750 755		
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760 765 770		
aca gag tac cct ttc ttt gag agc aga gtg gat aac aag gag aga act Thr Glu Tyr Pro Phe Phe Glu Ser Arg Val Asp Asn Lys Glu Arg Thr		2409
775 780 785		
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790 795 800		
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Ser	Cys	Asn	His	Glu	Ala	Glu	Lys	Leu	Gly	Cys	Ser	Ala	Ser	Asn	Phe	
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Val	Phe	Ala	Arg	Thr	Met	Pro	Ala	Glu	Gly	Ala	Asp	Asp	Ile	Pro	Gly	
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cca	gtg	acc	tgg	gag	cca	agg	cct	gaa	aac	tcc	atc	ttt	tta	aag	tgg	2601
Pro	Val	Thr	Trp	Glu	Pro	Arg	Pro	Glu	Asn	Ser	Ile	Phe	Leu	Lys	Trp	
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Pro	Glu	Pro	Glu	Asn	Pro	Asn	Gly	Leu	Ile	Leu	Met	Tyr	Glu	Ile	Lys	
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Tyr	Gly	Ser	Gln	Val	Glu	Asp	Gln	Arg	Glu	Cys	Val	Ser	Arg	Gln	Glu	
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Tyr	Arg	Lys	Tyr	Gly	Gly	Ala	Lys	Leu	Asn	Arg	Leu	Asn	Pro	Gly	Asn	
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Tyr	Thr	Ala	Arg	Ile	Gln	Ala	Thr	Ser	Leu	Ser	Gly	Asn	Gly	Ser	Trp	
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Thr	Asp	Pro	Val	Phe	Phe	Tyr	Val	Gln	Ala	Lys	Thr	Gly	Tyr	Glu	Asn	
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Phe	Ile	His	Leu	Ile	Ile	Ala	Leu	Pro	Val	Ala	Val	Leu	Leu	Ile	Val	
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Gly	Gly	Leu	Val	Ile	Met	Leu	Tyr	Val	Phe	His	Arg	Lys	Arg	Asn	Asn	
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Ser	Arg	Leu	Gly	Asn	Gly	Val	Leu	Tyr	Ala	Ser	Val	Asn	Pro	Glu	Tyr	
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Phe	Ser	Ala	Ala	Asp	Val	Tyr	Val	Pro	Asp	Glu	Trp	Glu	Val	Ala	Arg	
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Glu	Thr	Arg	Val	Ala	Ile	Lys	Thr	Val	Asn	Glu	Ala	Ala	Ser	Met		
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Phe	Asn	Cys	His	His	Val	Val	Arg	Leu	Leu	Gly	Val	Val	Ser	Gln	
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Gly	Gln	Pro	Thr	Leu	Val	Ile	Met	Glu	Leu	Met	Thr	Arg	Gly	Asp	
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Leu	Lys	Ser	Tyr	Leu	Arg	Ser	Leu	Arg	Pro	Glu	Met	Glu	Asn	Asn	
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Pro	Val	Leu	Ala	Pro	Pro	Ser	Leu	Ser	Lys	Met	Ile	Gln	Met	Ala	
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Val	His	Arg	Asp	Leu	Ala	Ala	Arg	Asn	Cys	Met	Val	Ala	Glu	Asp	
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Glu	Thr	Asp	Tyr	Tyr	Arg	Lys	Gly	Gly	Lys	Gly	Leu	Leu	Pro	Val	
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Arg	Trp	Met	Ser	Pro	Glu	Ser	Leu	Lys	Asp	Gly	Val	Phe	Thr	Thr	
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Tyr	Ser	Asp	Val	Trp	Ser	Phe	Gly	Val	Val	Leu	Trp	Glu	Ile	Ala	
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Thr	Leu	Ala	Glu	Gln	Pro	Tyr	Gln	Gly	Leu	Ser	Asn	Glu	Gln	Val	
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Leu	Arg	Phe	Val	Met	Glu	Gly	Gly	Leu	Leu	Asp	Lys	Pro	Asp	Asn	
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Cys	Pro	Asp	Met	Leu	Phe	Glu	Leu	Met	Arg	Met	Cys	Trp	Gln	Tyr	
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Asn	Pro	Lys	Met	Arg	Pro	Ser	Phe	Leu	Glu	Ile	Ile	Ser	Ser	Ile	
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35 40 45

Leu Glu Asn Cys Thr Val Ile Glu Gly Tyr Leu His Ile Leu Leu Ile
50 55 60

Ser Lys Ala Glu Asp Tyr Arg Ser Tyr Arg Phe Pro Lys Leu Thr Val
65 70 75 80

Ile Thr Glu Tyr Leu Leu Leu Phe Arg Val Ala Gly Leu Glu Ser Leu
85 90 95

Gly Asp Leu Phe Pro Asn Leu Thr Val Ile Arg Gly Trp Lys Leu Phe
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Tyr Asn Tyr Ala Leu Val Ile Phe Glu Met Thr Asn Leu Lys Asp Ile
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Gly Leu Tyr Asn Leu Arg Asn Ile Thr Arg Gly Ala Ile Arg Ile Glu
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Lys Asn Ala Asp Leu Cys Tyr Leu Ser Thr Val Asp Trp Ser Leu Ile
145 150 155 160

Leu Asp Ala Val Ser Asn Asn Tyr Ile Val Gly Asn Lys Pro Pro Lys
165 170 175

Glu Cys Gly Asp Leu Cys Pro Gly Thr Met Glu Glu Lys Pro Met Cys
180 185 190

Glu Lys Thr Thr Ile Asn Asn Glu Tyr Asn Tyr Arg Cys Trp Thr Thr
195 200 205

Asn Arg Cys Gln Lys Met Cys Pro Ser Thr Cys Gly Lys Arg Ala Cys
210 215 220

Thr Glu Asn Asn Glu Cys Cys His Pro Glu Cys Leu Gly Ser Cys Ser
225 230 235 240

Ala Pro Asp Asn Asp Thr Ala Cys Val Ala Cys Arg His Tyr Tyr Tyr
245 250 255

Ala Gly Val Cys Val Pro Ala Cys Pro Pro Asn Thr Tyr Arg Phe Glu
260 265 270

Gly Trp Arg Cys Val Asp Arg Asp Phe Cys Ala Asn Ile Leu Ser Ala
275 280 285

Glu Ser Ser Asp Ser Glu Gly Phe Val Ile His Asp Gly Glu Cys Met
290 295 300

Gln Glu Cys Pro Ser Gly Phe Ile Arg Asn Gly Ser Gln Ser Met Tyr
305 310 315 320

Cys Ile Pro Cys Glu Gly Pro Cys Pro Lys Val Cys Glu Glu Glu Lys
325 330 335

Lys Thr Lys Thr Ile Asp Ser Val Thr Ser Ala Gln Met Leu Gln Gly
340 345 350

Cys Thr Ile Phe Lys Gly Asn Leu Leu Ile Asn Ile Arg Arg Gly Asn
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Asn Ile Ala Ser Glu Leu Glu Asn Phe Met Gly Leu Ile Glu Val Val
370 375 380

Thr Gly Tyr Val Lys Ile Arg His Ser His Ala Leu Val Ser Leu Ser
385 390 395 400

Phe Leu Lys Asn Leu Arg Leu Ile Leu Gly Glu Glu Gln Leu Glu Gly
405 410 415

Asn Tyr Ser Phe Tyr Val Leu Asp Asn Gln Asn Leu Gln Gln Leu Trp
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Asp Trp Asp His Arg Asn Leu Thr Ile Lys Ala Gly Lys Met Tyr Phe
435 440 445

Ala Phe Asn Pro Lys Leu Cys Val Ser Glu Ile Tyr Arg Met Glu Glu
450 455 460

Val Thr Gly Thr Lys Gly Arg Gln Ser Lys Gly Asp Ile Asn Thr Arg
465 470 475 480

Asn Asn Gly Glu Arg Ala Ser Cys Glu Ser Asp Val Leu His Phe Thr
485 490 495

Ser Thr Thr Thr Ser Lys Asn Arg Ile Ile Ile Thr Trp His Arg Tyr
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Arg Pro Pro Asp Tyr Arg Asp Leu Ile Ser Phe Thr Val Tyr Tyr Lys
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Glu Ala Pro Phe Lys Asn Val Thr Glu Tyr Asp Gly Gln Asp Ala Cys
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Gly Ser Asn Ser Trp Asn Met Val Asp Val Asp Leu Pro Pro Asn Lys
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Asp Val Glu Pro Gly Ile Leu Leu His Gly Leu Lys Pro Trp Thr Gln
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Tyr Ala Val Tyr Val Lys Ala Val Thr Leu Thr Met Val Glu Asn Asp
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His Ile Arg Gly Ala Lys Ser Glu Ile Leu Tyr Ile Arg Thr Asn Ala
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Ser Val Pro Ser Ile Pro Leu Asp Val Leu Ser Ala Ser Asn Ser Ser
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Ser Gln Leu Ile Val Lys Trp Asn Pro Pro Ser Leu Pro Asn Gly Asn
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Leu Ser Tyr Tyr Ile Val Arg Trp Gln Arg Gln Pro Gln Asp Gly Tyr
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Leu Tyr Arg His Asn Tyr Cys Ser Lys Asp Lys Ile Pro Ile Arg Lys
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Tyr Ala Asp Gly Thr Ile Asp Ile Glu Glu Val Thr Glu Asn Pro Lys
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Thr Glu Val Cys Gly Gly Glu Lys Gly Pro Cys Cys Ala Cys Pro Lys
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Thr Glu Ala Glu Lys Gln Ala Glu Lys Glu Glu Ala Glu Tyr Arg Lys
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Val Phe Glu Asn Phe Leu His Asn Ser Ile Phe Val Pro Arg Pro Glu
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Arg Lys Arg Arg Asp Val Met Gln Val Ala Asn Thr Thr Met Ser Ser
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Arg Ser Arg Asn Thr Thr Ala Ala Asp Thr Tyr Asn Ile Thr Asp Pro
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Lys Glu Arg Thr Val Ile Ser Asn Leu Arg Pro Phe Thr Leu Tyr Arg
785 790 795 800

Ile Asp Ile His Ser Cys Asn His Glu Ala Glu Lys Leu Gly Cys Ser
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Ala Ser Asn Phe Val Phe Ala Arg Thr Met Pro Ala Glu Gly Ala Asp
820 825 830

Asp Ile Pro Gly Pro Val Thr Trp Glu Pro Arg Pro Glu Asn Ser Ile
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Phe Leu Lys Trp Pro Glu Pro Glu Asn Pro Asn Gly Leu Ile Leu Met
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Tyr Glu Ile Lys Tyr Gly Ser Gln Val Glu Asp Gln Arg Glu Cys Val
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Ser Arg Gln Glu Tyr Arg Lys Tyr Gly Gly Ala Lys Leu Asn Arg Leu
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Asn Pro Gly Asn Tyr Thr Ala Arg Ile Gln Ala Thr Ser Leu Ser Gly
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Asn Gly Ser Trp Thr Asp Pro Val Phe Phe Tyr Val Gln Ala Lys Thr
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Gly Tyr Glu Asn Phe Ile His Leu Ile Ile Ala Leu Pro Val Ala Val
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Lys Arg Asn Asn Ser Arg Leu Gly Asn Gly Val Leu Tyr Ala Ser Val
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Asn Pro Glu Tyr Phe Ser Ala Ala Asp Val Tyr Val Pro Asp Glu Trp
980 985 990

Glu Val Ala Arg Glu Lys Ile Thr Met Ser Arg Glu Leu Gly Gln Gly
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Ser Phe Gly Met Val Tyr Glu Gly Val Ala Lys Gly Val Val Lys
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Gln Met Ala Gly Glu Ile Ala Asp Gly Met Ala Tyr Leu Asn Ala
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Phe Tyr Tyr Ser Glu Glu Asn Lys Leu Pro Glu Pro Glu Glu Leu
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1295 1300 1305

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Lys Ala Glu Asn Gly Pro Gly Pro Gly Val Leu Val Leu Arg Ala
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Ala Leu Leu Tyr Leu His His Ala Lys Trp Ser Gln Ala Ala Pro
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Met Ala Glu Gly Gly Gln Asn His His Glu Val Val Lys Phe Met

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gag tgt gtg ccc act gag gag tcc aac atc acc atg cag att atg cgg Glu Cys Val Pro Thr Glu Glu Ser Asn Ile Thr Met Gln Ile Met Arg 95 100 105			340
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cac aac aaa tgt gaa tgc aga cca aag aaa gat aga gca aga caa gaa His Asn Lys Cys Glu Cys Arg Pro Lys Lys Asp Arg Ala Arg Gln Glu 125 130 135 140			436
aat ccc tgt ggg cct tgc tca gag cgg aga aag cat ttg ttt gta caa Asn Pro Cys Gly Pro Cys Ser Glu Arg Arg Lys His Leu Phe Val Gln 145 150 155			484
gat ccg cag acg tgt aaa tgt tcc tgc aaa aac aca gac tcg cgt tgc Asp Pro Gln Thr Cys Lys Cys Ser Cys Lys Asn Thr Asp Ser Arg Cys 160 165 170			532
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Arg Ser Tyr Cys His Pro Ile Glu Thr Leu Val Asp Ile Phe Gln Glu			

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Met Arg Cys Gly Gly Cys Cys Asn Asp Glu Gly Leu Glu Cys Val Pro			
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Thr Glu Glu Ser Asn Ile Thr Met Gln Ile Met Arg Ile Lys Pro His			
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Gln Gly Gln His Ile Gly Glu Met Ser Phe Leu Gln His Asn Lys Cys			
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Glu Cys Arg Pro Lys Lys Asp Arg Ala Arg Gln Glu Asn Pro Cys Gly			
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Pro Cys Ser Glu Arg Arg Lys His Leu Phe Val Gln Asp Pro Gln Thr			
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Met Ala Cys Pro Trp Lys Phe Leu Phe Lys Val Lys			
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Ser Tyr Gln Ser Asp Leu Lys Glu Lys Asp Ile Asn Asn Asn Val			
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Lys Lys Thr Pro Cys Ala Val Leu Ser Pro Thr Ile Gln Asp Asp Pro			
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Asn	Val	Pro	Glu	Ser	Leu	Asp	Lys	Leu	His	Val	Thr	Ser	Thr	Arg	Pro
							65			70				75	
cag	tat	gtg	agg	atc	aaa	aac	tgg	ggc	agt	gga	gag	att	ttg	cat	gac
Gln	Tyr	Val	Arg	Ile	Lys	Asn	Trp	Gly	Ser	Gly	Glu	Ile	Leu	His	Asp
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act	ctt	cac	cac	aag	gcc	aca	tcg	gat	ttc	act	tgc	aag	tcc	aag	tct
Thr	Leu	His	His	Lys	Ala	Thr	Ser	Asp	Phe	Thr	Cys	Lys	Ser	Lys	Ser
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Cys	Leu	Gly	Ser	Ile	Met	Asn	Pro	Lys	Ser	Leu	Thr	Arg	Gly	Pro	Arg
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gac	aag	cct	acc	cct	ctg	gag	gag	ctc	ctg	cct	cat	gcc	att	gag	ttc
Asp	Lys	Pro	Thr	Pro	Leu	Glu	Glu	Leu	Leu	Pro	His	Ala	Ile	Glu	Phe
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Leu	Ala	Arg	Leu	Glu	Ala	Val	Thr	Lys	Glu	Ile	Glu	Thr	Gly	Thr	
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Tyr	Gln	Leu	Thr	Leu	Asp	Glu	Leu	Ile	Phe	Ala	Thr	Lys	Met	Ala	Trp
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agg	aat	gcc	cct	cgc	tgc	atc	ggc	agg	atc	cag	tgg	tcc	aac	ctg	cag
Arg	Asn	Ala	Pro	Arg	Cys	Ile	Gly	Arg	Ile	Gln	Trp	Ser	Asn	Leu	Gln
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gtc	ttt	gac	gct	cg	aac	tgt	agc	aca	gca	cag	gaa	atg	ttt	cag	cac
Val	Phe	Asp	Ala	Arg	Asn	Cys	Ser	Thr	Ala	Gln	Glu	Met	Phe	Gln	His
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Ile	Cys	Arg	His	Ile	Leu	Tyr	Ala	Thr	Asn	Asn	Gly	Asn	Ile	Arg	Ser
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gcc	atc	act	gtg	ttc	ccc	cag	cg	agt	gac	ggc	aaa	cat	gac	ttc	agg
Ala	Ile	Thr	Val	Phe	Pro	Gln	Arg	Ser	Asp	Gly	Lys	His	Asp	Phe	Arg
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ctc	tgg	aat	tca	cag	ctc	atc	cg	tac	gct	ggc	tac	cag	atg	ccc	gat
Leu	Trp	Asn	Ser	Gln	Leu	Ile	Arg	Tyr	Ala	Gly	Tyr	Gln	Met	Pro	Asp
							255			260				265	
ggc	acc	atc	aga	ggg	gat	gct	gcc	acc	ttg	gag	ttc	acc	cag	ttg	tgc
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Ile Asp Leu Gly Trp Lys Pro Arg Tyr Gly Arg Phe Asp Val Leu Pro		
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Pro Asp Leu Val Leu Glu Val Thr Met Glu His Pro Lys Tyr Glu Trp		
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Phe Gln Glu Leu Gly Leu Lys Trp Tyr Ala Leu Pro Ala Val Ala Asn		
335 340 345		
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Gln Arg Tyr Asn Ile Leu Glu Val Gly Arg Arg Met Gly Leu Glu		
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Thr His Thr Leu Ala Ser Leu Trp Lys Asp Arg Ala Val Thr Glu Ile		
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Lys Val Met Ala Ser Arg Val Arg Ala Thr Val Leu Phe Ala Thr Glu		
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Tyr Ala Phe Asn Thr Lys Val Val Cys Met Asp Gln Tyr Lys Ala Ser		
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Thr Leu Glu Glu Gln Leu Leu Val Val Thr Ser Thr Phe Gly		
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Glu His Leu Gly Ile Phe Pro Gly Asn Gln Thr Ala Leu Val Gln Gly		
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Ala Thr Ser Thr Ala Val Ser Glu Gln Ala Pro Thr Glu Gln Ser Pro			
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Thr Val Gln Asp Cys Tyr His Gly Asp Gly Gln Ser Tyr Arg Gly Ser	
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Phe Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ser Trp Ser Ser Met	
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Thr Pro His Trp His Gln Arg Thr Thr Glu Tyr Tyr Pro Asn Gly Gly	
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Leu Thr Arg Asn Tyr Cys Arg Asn Pro Asp Ala Glu Ile Arg Pro Trp	
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tgt tat acc atg gat ccc agt gtc aga tgg gag tac tgc aac ctg acg	8100
Cys Tyr Thr Met Asp Pro Ser Val Arg Trp Glu Tyr Cys Asn Leu Thr	
465 470 475	
caa tgt cca gtg atg gaa tca act ctc ctc aca act ccc acg gtg gtc	8148
Gln Cys Pro Val Met Glu Ser Thr Leu Leu Thr Thr Pro Thr Val Val	
480 485 490	
cca gtt cca agc aca gag ctt cct tct gaa gaa gca cca act gaa aac	8196
Pro Val Pro Ser Thr Glu Leu Pro Ser Glu Glu Ala Pro Thr Glu Asn	
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Ser Thr Gly Val Gln Asp Cys Tyr Arg Gly Asp Gly Gln Ser Tyr Arg	
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Gly Thr Leu Ser Thr Thr Ile Thr Gly Arg Thr Cys Gln Ser Trp Ser	
530 535 540	
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Ser Met Thr Pro His Trp His Arg Arg Ile Pro Leu Tyr Tyr Pro Asn	
545 550 555	
gct ggc ctg acc agg aac tac tgc agg aat cca gat gct gag att cgc	8388
Ala Gly Leu Thr Arg Asn Tyr Cys Arg Asn Pro Asp Ala Glu Ile Arg	
560 565 570	
cct tgg tgt tac acc atg gat ccc agt gtc agg tgg gag tac tgc aac	8436
Pro Trp Cys Tyr Thr Met Asp Pro Ser Val Arg Trp Glu Tyr Cys Asn	
575 580 585 590	
ctg aca cga tgt cca gtg aca gaa tcg agt gtc ctc aca act ccc aca	8484
Leu Thr Arg Cys Pro Val Thr Glu Ser Ser Val Leu Thr Thr Pro Thr	
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Val Ala Pro Val Pro Ser Thr Glu Ala Pro Ser Glu Gln Ala Pro Pro	
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gag aaa agc cct gtg gtc cag gat tgc tac cat ggt gat gga cgg agt	8580
Glu Lys Ser Pro Val Val Gln Asp Cys Tyr His Gly Asp Gly Arg Ser	
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Tyr Arg Gly Ile Ser Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ser	
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Trp Ser Ser Met Ile Pro His Trp His Gln Arg Thr Pro Glu Asn Tyr	
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cca aat gct ggc ctg acc gag aac tac tgc agg aat cca gat tct ggg	8724
Pro Asn Ala Gly Leu Thr Glu Asn Tyr Cys Arg Asn Pro Asp Ser Gly	
675 680 685	
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Lys Gln Pro Trp Cys Tyr Thr Asp Pro Cys Val Arg Trp Glu Tyr	
690 695 700	
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Cys Asn Leu Thr Gln Cys Ser Glu Thr Glu Ser Gly Val Leu Glu Thr	
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ccc act gtt gtt cca gtt cca agc atg gag gct cat tct gaa gca gca	8868
Pro Thr Val Val Pro Val Pro Ser Met Glu Ala His Ser Glu Ala Ala	
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Pro Thr Glu Gln Thr Pro Val Val Arg Gln Cys Tyr His Gly Asn Gly	
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Gln Ser Tyr Arg Gly Thr Phe Ser Thr Thr Val Thr Gly Arg Thr Cys	
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Gln Ser Trp Ser Ser Met Thr Pro His Arg His Gln Arg Thr Pro Glu	
770 775 780	
aac tac cca aat gat ggc ctg aca atg aac tac tgc agg aat cca gat	9060
Asn Tyr Pro Asn Asp Gly Leu Thr Met Asn Tyr Cys Arg Asn Pro Asp	
785 790 795	
gcc gat aca ggc cct tgg tgt ttt acc atg gac ccc agc atc agg tgg	9108
Ala Asp Thr Gly Pro Trp Cys Phe Thr Met Asp Pro Ser Ile Arg Trp	
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Glu Tyr Cys Asn Leu Thr Arg Cys Ser Asp Thr Glu Gly Thr Val Val	
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Ala Pro Pro Thr Val Ile Gln Val Pro Ser Leu Gly Pro Pro Ser Glu	
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Gln Asp Cys Met Phe Gly Asn Gly Lys Gly Tyr Arg Gly Lys Lys Ala	
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acc act gtt act ggg acg cca tgc cag gaa tgg gct gcc cag gag ccc	9300
Thr Thr Val Thr Gly Thr Pro Cys Gln Glu Trp Ala Ala Gln Glu Pro	
865 870 875	

cat aga cac agc acg ttc att cca ggg aca aat aaa tgg gca ggt ctg	9348
His Arg His Ser Thr Phe Ile Pro Gly Thr Asn Lys Trp Ala Gly Leu	
880 885 890	
gaa aaa aat tac tgc cgt aac cct gat ggt gac atc aat ggt ccc tgg	9396
Glu Lys Asn Tyr Cys Arg Asn Pro Asp Gly Asp Ile Asn Gly Pro Trp	
895 900 905 910	
tgc tac aca atg aat cca aga aaa ctt ttt gac tac tgt gat atc cct	9444
Cys Tyr Thr Met Asn Pro Arg Lys Leu Phe Asp Tyr Cys Asp Ile Pro	
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Leu Cys Ala Ser Ser Ser Phe Asp Cys Gly Lys Pro Gln Val Glu Pro	
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Lys Lys Cys Pro Gly Ser Ile Val Gly Gly Cys Val Ala His Pro His	
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Ser Trp Pro Trp Gln Val Ser Leu Arg Thr Arg Phe Gly Lys His Phe	
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Cys Gly Gly Thr Leu Ile Ser Pro Glu Trp Val Leu Thr Ala Ala His	
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Cys Leu Lys Lys Ser Ser Arg Pro Ser Ser Tyr Lys Val Ile Leu Gly	
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Ala His Gln Glu Val Asn Leu Glu Ser His Val Gln Glu Ile Glu	
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Val Ser Arg Ile Phe Leu Glu Pro Thr Gln Ala Asp Ile Ala Leu	
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Leu Lys Leu Ser Arg Pro Ala Val Ile Thr Asp Lys Val Met Pro	
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Ala Cys Leu Pro Ser Pro Asp Tyr Met Val Thr Ala Arg Thr Glu	
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Cys Tyr Ile Thr Gly Trp Gly Glu Thr Gln Gly Thr Phe Gly Thr	
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Gly Leu Leu Lys Glu Ala Gln Leu Ile Val Ile Glu Asn Glu Val	
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tgc aat cac tat aag tat att tgt gct gag cat ttg gcc aga ggc	9999
Cys Asn His Tyr Lys Tyr Ile Cys Ala Glu His Leu Ala Arg Gly	
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Glu Lys Asp Lys Tyr Ile Leu Gln Gly Val Thr Ser Trp Gly Leu
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Gly Cys Ala Arg Pro Asn Lys Pro Gly Val Tyr Ala Arg Val Ser
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Arg Phe Val Thr Trp Ile Glu Gly Met Met Arg Asn Asn
1160 1165

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Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro
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Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Gln Gly Thr
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Tyr Phe Ile Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met
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Thr Pro His Ser His Ser Arg Thr Pro Ala Tyr Tyr Pro Asn Ala Gly
100 105 110

Leu Ile Lys Asn Tyr Cys Arg Asn Pro Asp Pro Val Ala Ala Pro Trp
115 120 125

Cys Tyr Thr Thr Asp Pro Ser Val Arg Trp Glu Tyr Cys Asn Leu Thr
130 135 140

Arg Cys Ser Asp Ala Glu Trp Thr Ala Phe Val Pro Pro Asn Val Ile
145 150 155 160

Leu Ala Pro Ser Leu Glu Ala Phe Phe Glu Gln Ala Leu Thr Glu Glu
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Thr Pro Gly Val Gln Asp Cys Tyr Tyr His Tyr Gly Gln Ser Tyr Arg
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Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser
195 200 205

Ser Met Thr Pro His Gln His Ser Arg Thr Pro Glu Asn Tyr Pro Asn
210 215 220

Ala Gly Leu Thr Arg Asn Tyr Cys Arg Asn Pro Asp Ala Glu Ile Arg
225 230 235 240

Pro Trp Cys Tyr Thr Met Asp Pro Ser Val Arg Trp Glu Tyr Cys Asn
245 250 255

Leu Thr Gln Cys Leu Val Thr Glu Ser Ser Val Leu Ala Thr Leu Thr
260 265 270

Val Val Pro Asp Pro Ser Thr Glu Ala Ser Ser Glu Glu Ala Pro Thr
275 280 285

Glu Gln Ser Pro Gly Val Gln Asp Cys Tyr His Gly Asp Gly Gln Ser
290 295 300

Tyr Arg Gly Ser Phe Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ser
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Trp Ser Ser Met Thr Pro His Trp His Gln Arg Thr Thr Glu Tyr Tyr
325 330 335

Pro Asn Gly Gly Leu Thr Arg Asn Tyr Cys Arg Asn Pro Asp Ala Glu
340 345 350

Ile Ser Pro Trp Cys Tyr Thr Met Asp Pro Asn Val Arg Trp Glu Tyr
355 360 365

Cys Asn Leu Thr Gln Cys Pro Val Thr Glu Ser Ser Val Leu Ala Thr
370 375 380

Ser Thr Ala Val Ser Glu Gln Ala Pro Thr Glu Gln Ser Pro Thr Val
385 390 395 400

Gln Asp Cys Tyr His Gly Asp Gly Gln Ser Tyr Arg Gly Ser Phe Ser
405 410 415

Thr Thr Val Thr Gly Arg Thr Cys Gln Ser Trp Ser Ser Met Thr Pro
420 425 430

His Trp His Gln Arg Thr Thr Glu Tyr Tyr Pro Asn Gly Gly Leu Thr
435 440 445

Arg Asn Tyr Cys Arg Asn Pro Asp Ala Glu Ile Arg Pro Trp Cys Tyr
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Thr Met Asp Pro Ser Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys
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Pro Val Met Glu Ser Thr Leu Leu Thr Thr Pro Thr Val Val Pro Val
485 490 495

Pro Ser Thr Glu Leu Pro Ser Glu Glu Ala Pro Thr Glu Asn Ser Thr
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Gly Val Gln Asp Cys Tyr Arg Gly Asp Gly Gln Ser Tyr Arg Gly Thr
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Leu Ser Thr Thr Ile Thr Gly Arg Thr Cys Gln Ser Trp Ser Ser Met
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Leu Thr Arg Asn Tyr Cys Arg Asn Pro Asp Ala Glu Ile Arg Pro Trp
565 570 575

Cys Tyr Thr Met Asp Pro Ser Val Arg Trp Glu Tyr Cys Asn Leu Thr
580 585 590

Arg Cys Pro Val Thr Glu Ser Ser Val Leu Thr Thr Pro Thr Val Ala
595 600 605

Pro Val Pro Ser Thr Glu Ala Pro Ser Glu Gln Ala Pro Pro Glu Lys
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Ser Pro Val Val Gln Asp Cys Tyr His Gly Asp Gly Arg Ser Tyr Arg
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Gly Ile Ser Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ser Trp Ser
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Ser Met Ile Pro His Trp His Gln Arg Thr Pro Glu Asn Tyr Pro Asn
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Ala Gly Leu Thr Glu Asn Tyr Cys Arg Asn Pro Asp Ser Gly Lys Gln
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Pro Trp Cys Tyr Thr Thr Asp Pro Cys Val Arg Trp Glu Tyr Cys Asn
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Leu Thr Gln Cys Ser Glu Thr Glu Ser Gly Val Leu Glu Thr Pro Thr
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Val Val Pro Val Pro Ser Met Glu Ala His Ser Glu Ala Ala Pro Thr
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Glu Gln Thr Pro Val Val Arg Gln Cys Tyr His Gly Asn Gly Gln Ser
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Tyr Arg Gly Thr Phe Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ser
755 760 765

Trp Ser Ser Met Thr Pro His Arg His Gln Arg Thr Pro Glu Asn Tyr
770 775 780

Pro Asn Asp Gly Leu Thr Met Asn Tyr Cys Arg Asn Pro Asp Ala Asp
785 790 795 800

Thr Gly Pro Trp Cys Phe Thr Met Asp Pro Ser Ile Arg Trp Glu Tyr
805 810 815

Cys Asn Leu Thr Arg Cys Ser Asp Thr Glu Gly Thr Val Val Ala Pro
820 825 830

Pro Thr Val Ile Gln Val Pro Ser Leu Gly Pro Pro Ser Glu Gln Asp
835 840 845

Cys Met Phe Gly Asn Gly Lys Gly Tyr Arg Gly Lys Lys Ala Thr Thr
850 855 860

Val Thr Gly Thr Pro Cys Gln Glu Trp Ala Ala Gln Glu Pro His Arg
865 870 875 880

His Ser Thr Phe Ile Pro Gly Thr Asn Lys Trp Ala Gly Leu Glu Lys
885 890 895

Asn Tyr Cys Arg Asn Pro Asp Gly Asp Ile Asn Gly Pro Trp Cys Tyr
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Thr Met Asn Pro Arg Lys Leu Phe Asp Tyr Cys Asp Ile Pro Leu Cys
915 920 925

Ala Ser Ser Ser Phe Asp Cys Gly Lys Pro Gln Val Glu Pro Lys Lys
930 935 940

Cys Pro Gly Ser Ile Val Gly Gly Cys Val Ala His Pro His Ser Trp
945 950 955 960

Pro Trp Gln Val Ser Leu Arg Thr Arg Phe Gly Lys His Phe Cys Gly
965 970 975

Gly Thr Leu Ile Ser Pro Glu Trp Val Leu Thr Ala Ala His Cys Leu
980 985 990

Lys Lys Ser Ser Arg Pro Ser Ser Tyr Lys Val Ile Leu Gly Ala His
995 1000 1005

Gln Glu Val Asn Leu Glu Ser His Val Gln Glu Ile Glu Val Ser
1010 1015 1020

Arg Leu Phe Leu Glu Pro Thr Gln Ala Asp Ile Ala Leu Leu Lys
1025 1030 1035

Leu Ser Arg Pro Ala Val Ile Thr Asp Lys Val Met Pro Ala Cys
1040 1045 1050

Leu Pro Ser Pro Asp Tyr Met Val Thr Ala Arg Thr Glu Cys Tyr
1055 1060 1065

Ile Thr Gly Trp Gly Glu Thr Gln Gly Thr Phe Gly Thr Gly Leu
1070 1075 1080

Leu Lys Glu Ala Gln Leu Leu Val Ile Glu Asn Glu Val Cys Asn
1085 1090 1095

His Tyr Lys Tyr Ile Cys Ala Glu His Leu Ala Arg Gly Thr Asp
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Asp Lys Tyr Ile Leu Gln Gly Val Thr Ser Trp Gly Leu Gly Cys
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Met Asp Pro Pro Arg Pro Ala Leu Leu Ala Leu
1 5 10
ctg gcg ctg cct gcg ctg ctg ctg ctg ctg gcg ggc gcc agg gcc 159
Leu Ala Leu Pro Ala Leu Leu Leu Leu Ala Gly Ala Arg Ala
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gaa gag gaa atg ctg gaa aat gtc agc ctg gtc tgt cca aaa gat gcg 207
Glu Glu Met Leu Glu Asn Val Ser Leu Val Cys Pro Lys Asp Ala
30 35 40
acc cga ttc aag cac ctc cgg aag tac aca tac aac tat gag gct gag 255
Thr Arg Phe Lys His Leu Arg Lys Tyr Thr Tyr Asn Tyr Glu Ala Glu
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agt tcc agt gga gtc cct ggg act gct gat tca aga agt gcc acc agg 303
Ser Ser Ser Gly Val Pro Gly Thr Ala Asp Ser Arg Ser Ala Thr Arg
60 65 70 75
atc aac tgc aag gtt gag ctg gag gtt ccc cag ctc tgc agc ttc atc 351
Ile Asn Cys Lys Val Glu Leu Glu Val Pro Gln Leu Cys Ser Phe Ile
80 85 90
ctg aag acc agc cag tgc atc ctg aaa gag gtg tat ggc ttc aac cct 399
Leu Lys Thr Ser Gln Cys Ile Leu Lys Glu Val Tyr Gly Phe Asn Pro
95 100 105
gag ggc aaa gcc ttg ctg aag aaa acc aag aac tct gag gag ttt gct 447

Glu	Gly	Lys	Ala	Leu	Leu	Lys	Thr	Lys	Asn	Ser	Glu	Glu	Phe	Ala		
110						115					120					
gca	gcc	atg	tcc	agg	tat	gag	ctc	aag	ctg	gcc	att	cca	gaa	ggg	aag	495
Ala	Ala	Met	Ser	Arg	Tyr	Glu	Leu	Lys	Leu	Ala	Ile	Pro	Glu	Gly	Lys	
125						130					135					
cag	gtt	ttc	ctt	tac	ccg	gag	aaa	gat	gaa	cct	act	tac	atc	ctg	aac	543
Gln	Val	Phe	Leu	Tyr	Pro	Glu	Lys	Asp	Glu	Pro	Thr	Tyr	Ile	Leu	Asn	
140						145				150					155	
atc	aag	agg	ggc	atc	att	tct	gcc	ctc	ctg	gtt	ccc	cca	gag	aca	gaa	591
Ile	Lys	Arg	Gly	Ile	Ile	Ser	Ala	Leu	Leu	Val	Pro	Pro	Glu	Thr	Glu	
											160	165		170		
gaa	gcc	aag	caa	gtg	ttg	ttt	ctg	gat	acc	gtg	tat	gga	aac	tgc	tcc	639
Glu	Ala	Lys	Gln	Val	Leu	Phe	Leu	Asp	Thr	Val	Tyr	Gly	Asn	Cys	Ser	
										175	180		185			
act	cac	ttt	acc	gtc	aag	acg	agg	aag	ggc	aat	gtg	gca	aca	gaa	ata	687
Thr	His	Phe	Thr	Val	Lys	Thr	Arg	Lys	Gly	Asn	Val	Ala	Thr	Glu	Ile	
										190	195		200			
tcc	act	gaa	aga	gac	ctg	ggg	cag	tgt	gat	cgc	ttc	aag	ccc	atc	cgc	735
Ser	Thr	Glu	Arg	Asp	Leu	Gly	Gln	Cys	Asp	Arg	Phe	Lys	Pro	Ile	Arg	
										205	210		215			
aca	ggc	atc	agc	cca	ctt	gct	ctc	atc	aaa	ggc	atg	acc	cgc	ccc	ttg	783
Thr	Gly	Ile	Ser	Pro	Leu	Ala	Leu	Ile	Lys	Gly	Met	Thr	Arg	Pro	Leu	
										220	225		230		235	
tca	act	ctg	atc	agc	agc	cag	tcc	tgt	cag	tac	aca	ctg	gac	gct		831
Ser	Thr	Leu	Ile	Ser	Ser	Gln	Ser	Cys	Gln	Tyr	Thr	Leu	Asp	Ala		
										240	245		250			
aag	agg	aag	cat	gtg	gca	gaa	gcc	atc	tgc	aag	gag	caa	cac	ctc	ttc	879
Lys	Arg	Lys	His	Val	Ala	Glu	Ala	Ile	Cys	Lys	Glu	Gln	His	Leu	Phe	
										255	260		265			
ctg	cct	ttc	tcc	tac	aag	aat	aag	tat	ggg	atg	gta	gca	caa	gtg	aca	927
Leu	Pro	Phe	Ser	Tyr	Lys	Asn	Lys	Tyr	Gly	Met	Val	Ala	Gln	Val	Thr	
										270	275		280			
cag	act	ttg	aaa	ctt	gaa	gac	aca	cca	aag	atc	aac	agc	cgc	ttc	ttt	975
Gln	Thr	Leu	Lys	Leu	Glu	Asp	Thr	Pro	Lys	Ile	Asn	Ser	Arg	Phe	Phe	
										285	290		295			
ggt	gaa	ggt	act	aag	aag	atg	ggc	ctc	gca	ttt	gag	agc	acc	aaa	tcc	1023
Gly	Glu	Gly	Thr	Lys	Lys	Met	Gly	Leu	Ala	Phe	Glu	Ser	Thr	Lys	Ser	
										300	305		310		315	
aca	tca	cct	cca	aag	cag	gcc	gaa	gct	gtt	ttg	aag	act	gtc	cag	gaa	1071
Thr	Ser	Pro	Pro	Lys	Gln	Ala	Glu	Ala	Val	Leu	Lys	Thr	Val	Gln	Glu	
										320	325		330			
ctg	aaa	aaa	cta	acc	atc	tct	gag	caa	aat	atc	cag	aga	gct	aat	ctc	1119
Leu	Lys	Lys	Leu	Thr	Ile	Ser	Glu	Gln	Asn	Ile	Gln	Arg	Ala	Asn	Leu	
										335	340		345			
ttc	aat	aag	ctg	gtt	act	gag	ctg	aga	ggc	ctc	agt	gat	gaa	gca	gtc	1167

Phe Asn Lys Leu Val Thr Glu Leu Arg Gly Leu Ser Asp Glu Ala Val	350	355	360	
aca tct ctc ttg cca cag ctg att gag gat gtc tcc agc ccc atc act tta	365	370	375	1215
Thr Ser Leu Leu Pro Gln Leu Ile Glu Val Ser Ser Pro Ile Thr Leu				
caa gcc ttg gtt cag tgt gga cag cct cag tgc tcc act cac atc ctc	380	385	390	1263
Gln Ala Leu Val Gln Cys Gly Gln Pro Gln Cys Ser Thr His Ile Leu				
cag tgg ctg aaa cgt gtg cat gcc aac ccc ctt ctg ata gat gtc gtc	400	405	410	1311
Gln Trp Leu Lys Arg Val His Ala Asn Pro Leu Leu Ile Asp Val Val				
acc tac ctg gtg gcc ctg atc ccc gag ccc tca gca cag cag ctg cga	415	420	425	1359
Thr Tyr Leu Val Ala Leu Ile Pro Glu Pro Ser Ala Gln Gln Leu Arg				
gag atc ttc aac atg gcg agg gat cag cgc agc cga gcc acc ttg tat	430	435	440	1407
Glu Ile Phe Asn Met Ala Arg Asp Gln Arg Ser Arg Ala Thr Leu Tyr				
gcg ctg agc cac gcg gtc aac aac tat cat aag aca aac cct aca ggg	445	450	455	1455
Ala Leu Ser His Ala Val Asn Asn Tyr His Lys Thr Asn Pro Thr Gly				
acc cag gag ctg ctg gac att gct aat tac ctg atg gaa cag att caa	460	465	470	1503
Thr Gln Glu Leu Leu Asp Ile Ala Asn Tyr Leu Met Glu Gln Ile Gln				
gat gac tgc act ggg gat gaa gat tac acc tat ttg att ctg cgg gtc	480	485	490	1551
Asp Asp Cys Thr Gly Asp Glu Asp Tyr Thr Tyr Leu Ile Leu Arg Val				
att gga aat atg ggc caa acc atg gag cag tta act cca gaa ctc aag	495	500	505	1599
Ile Gly Asn Met Gly Gln Thr Met Glu Gln Leu Thr Pro Glu Leu Lys				
tct tca atc ctg aaa tgt gtc caa agt aca aag cca tca ctg atg atc	510	515	520	1647
Ser Ser Ile Leu Lys Cys Val Gln Ser Thr Lys Pro Ser Leu Met Ile				
cag aaa gct gcc atc cag gct ctg cgg aaa atg gag cct aaa gac aag	525	530	535	1695
Gln Lys Ala Ala Ile Gln Ala Leu Arg Lys Met Glu Pro Lys Asp Lys				
gac cag gag gtt ctt ctt cag act ttc ctt gat gat gct tct ccg gga	540	545	550	1743
Asp Gln Glu Val Leu Leu Gln Thr Phe Leu Asp Asp Ala Ser Pro Gly				
gat aag cga ctg gct gat ctt atg ttg atg agg agt cct tca cag	560	565	570	1791
Asp Lys Arg Leu Ala Ala Tyr Leu Met Leu Met Arg Ser Pro Ser Gln				
gca gat att aac aaa att gtc caa att cta cca tgg gaa cag aat gag	575	580	585	1839
Ala Asp Ile Asn Lys Ile Val Gln Ile Leu Pro Trp Glu Gln Asn Glu				
caa gtg aag aac ttt gtg gct tcc cat att gcc aat atc ttg aac tca				1887

Gln Val Lys Asn Phe Val Ala Ser His Ile Ala Asn Ile Leu Asn Ser		590	595	600	
gaa gaa ttg gat atc caa gat ctg aaa aag tta gtg aaa gaa gtt ctg					1935
Glu Glu Leu Asp Ile Gln Asp Leu Lys Lys Leu Val Lys Glu Val Leu					
605	610	615			
aaa gaa tct caa ctt cca act gtc atg gac ttc aga aaa ttc tct cgg					1983
Lys Glu Ser Gln Leu Pro Thr Val Met Asp Phe Arg Lys Phe Ser Arg					
620	625	630			635
aac tat caa ctc tac aaa tct gtt tct att cca tca ctt gac cca gcc					2031
Asn Tyr Gln Leu Tyr Lys Ser Val Ser Ile Pro Ser Leu Asp Pro Ala					
640	645	650			
tca gcc aaa ata gaa ggg aat ctt ata ttt gat cca aat aac tac ctt					2079
Ser Ala Lys Ile Glu Gly Asn Leu Ile Phe Asp Pro Asn Asn Tyr Leu					
655	660	665			
cct aaa gaa agc atg ctg aaa act acc ctc act gcc ttt gga ttt gct					2127
Pro Lys Glu Ser Met Leu Lys Thr Thr Leu Thr Ala Phe Gly Phe Ala					
670	675	680			
tca gct gac ctc atc gag att ggc ttg gaa gga aaa ggc ttt gag cca					2175
Ser Ala Asp Ile Glu Ile Gly Leu Glu Gly Lys Gly Phe Glu Pro					
685	690	695			
aca ttg gaa gct ctt ttt ggg aag caa gga ttt ttc cca gac agt gtc					2223
Thr Leu Glu Ala Leu Phe Gly Lys Gln Gly Phe Phe Pro Asp Ser Val					
700	705	710			715
aac aaa gct ttg tac tgg gtt aat ggt caa gtt cct gat ggt gtc tct					2271
Asn Lys Ala Leu Tyr Trp Val Asn Gly Gln Val Pro Asp Gly Val Ser					
720	725	730			
aag gtc tta gtg gac cac ttt ggc tat acc aaa gat gat aaa cat gag					2319
Lys Val Leu Val Asp His Phe Gly Tyr Thr Lys Asp Asp Lys His Glu					
735	740	745			
cag gat atg gta aat gga ata atg ctc agt gtt gag aag ctg att aaa					2367
Gln Asp Met Val Asn Gly Ile Met Leu Ser Val Glu Lys Leu Ile Lys					
750	755	760			
gat ttg aaa tcc aaa gaa gtc ccg gaa gcc aga gcc tac ctc cgc atc					2415
Asp Leu Lys Ser Lys Glu Val Pro Glu Ala Arg Ala Tyr Leu Arg Ile					
765	770	775			
ttg gga gag gag ctt ggt ttt gcc agt ctc cat gac ctc cag ctc ctg					2463
Leu Gly Glu Glu Leu Gly Phe Ala Ser Leu His Asp Leu Gln Leu Leu					
780	785	790			795
gga aag ctg ctt ctg atg ggt gcc cgcc act ctg cag ggg atc ccc cag					2511
Gly Lys Leu Leu Leu Met Gly Ala Arg Thr Leu Gln Gly Ile Pro Gln					
800	805	810			
atg att gga gag gtc atc agg aag ggc tca aag aat gac ttt ttt ctt					2559
Met Ile Gly Glu Val Ile Arg Lys Gly Ser Lys Asn Asp Phe Phe Leu					
815	820	825			
cac tac atc ttc atg gag aat gcc ttt gaa ctc ccc act gga gct gga					2607

His	Tyr	Ile	Phe	Met	Glu	Asn	Ala	Phe	Glu	Leu	Pro	Thr	Gly	Ala	Gly	
830																840
tta	cag	ttg	caa	ata	tct	tca	tct	gga	gtc	att	gct	ccc	gga	gcc	aag	2655
Leu	Gln	Leu	Gln	Ile	Ser	Ser	Ser	Gly	Val	Ile	Ala	Pro	Gly	Ala	Lys	
845																855
gct	gga	gta	aaa	ctg	gaa	gta	gcc	aac	atg	cag	gct	gaa	ctg	gtg	gca	2703
Ala	Gly	Val	Lys	Leu	Glu	Val	Ala	Asn	Met	Gln	Ala	Glu	Leu	Val	Ala	
860																870
aaa	ccc	tcc	gtg	tct	gtg	gag	ttt	gtg	aca	aat	atg	ggc	atc	atc	att	2751
Lys	Pro	Ser	Val	Ser	Val	Glu	Val	Thr	Asn	Met	Gly	Ile	Ile	Ile		
880																890
ccg	gac	tcc	gct	agg	agt	ggg	gtc	cag	atg	aac	acc	aac	ttc	tcc	cac	2799
Pro	Asp	Phe	Ala	Arg	Ser	Gly	Val	Gln	Met	Asn	Thr	Asn	Phe	Phe	His	
895																900
gag	tgc	ggt	ctg	gag	gct	cat	gtt	gcc	cta	aaa	cct	ggg	aag	ctg	aag	2847
Glu	Ser	Gly	Ieu	Glu	Ala	His	Val	Ala	Leu	Lys	Pro	Gly	Lys	Lys	Lys	
910																915
ttt	atc	att	cct	tcc	cca	aag	aga	cca	gtc	aag	ctg	ctc	agt	gga	ggc	2895
Phe	Ile	Ile	Pro	Ser	Pro	Lys	Arg	Pro	Val	Lys	Leu	Leu	Ser	Gly	Gly	
925																930
935																
aac	aca	tta	cat	ttg	gtc	tct	acc	acc	aaa	acg	gag	gtg	atc	cca	cct	2943
Asn	Thr	Leu	His	Leu	Val	Ser	Thr	Thr	Lys	Thr	Glu	Val	Ile	Pro	Pro	
940																945
950																955
ctc	att	gag	aac	agg	cag	tcc	tgg	tca	gtt	tgc	aag	caa	gtc	ttt	cct	2991
Leu	Ile	Glu	Asn	Arg	Gln	Ser	Trp	Ser	Val	Cys	Lys	Gln	Val	Phe	Pro	
960																965
970																
ggc	ctg	aat	tac	tgc	acc	tca	ggc	gct	tac	tcc	aac	gcc	agc	tcc	aca	3039
Gly	Leu	Asn	Tyr	Cys	Thr	Ser	Gly	Ala	Tyr	Ser	Asn	Ala	Ser	Ser	Thr	
975																980
985																
gac	tcc	gcc	tcc	tac	tat	ccg	ctg	acc	ggg	gac	acc	aga	tta	gag	ctg	3087
Asp	Ser	Ala	Ser	Tyr	Tyr	Pro	Leu	Thr	Gly	Asp	Thr	Arg	Leu	Glu	Leu	
990																995
1000																
gaa	ctg	agg	cct	aca	gga	gag	att	gag	cag	tat	tct	gtc	agc	gca		3132
Glu	Leu	Arg	Pro	Thr	Gly	Glu	Ile	Glu	Gln	Tyr	Ser	Val	Ser	Ala		
1005																1010
1015																
acc	tat	gag	ctc	cag	aga	gag	gac	aga	gcc	ttg	gtg	gat	acc	ctg		3177
Thr	Tyr	Glu	Leu	Gln	Arg	Glu	Asp	Arg	Ala	Leu	Val	Asp	Thr	Leu		
1020																1025
1030																
aag	ttt	gta	act	caa	gca	gaa	ggt	gcg	aag	cag	act	gag	gct	acc		3222
Lys	Phe	Val	Thr	Gln	Ala	Glu	Gly	Ala	Lys	Gln	Thr	Glu	Ala	Thr		
1035																1040
1045																
atg	aca	ttc	aaa	tat	aat	cgg	cag	agt	atg	acc	ttg	tcc	agt	gaa		3267
Met	Thr	Phe	Lys	Tyr	Asn	Arg	Gln	Ser	Met	Thr	Ieu	Ser	Ser	Glu		
1050																1055
1060																
gtc	caa	att	ccg	gat	ttt	gat	gtt	gac	ctc	gga	aca	atc	ctc	aga		3312

Val	Gln	Ile	Pro	Asp	Phe	Asp	Val	Asp	Leu	Gly	Thr	Ile	Leu	Arg	
1065						1070					1075				
gtt	aat	gat	gaa	tct	act	gag	ggc	aaa	acg	tct	tac	aga	ctc	acc	3357
Val	Asn	Asp	Glu	Ser	Thr	Glu	Gly	Lys	Thr	Ser	Tyr	Arg	Leu	Thr	
1080						1085					1090				
ctg	gac	att	cag	aac	aag	aaa	att	act	gag	gtc	gcc	ctc	atg	ggc	3402
Leu	Asp	Ile	Gln	Asn	Lys	Lys	Ile	Thr	Glu	Val	Ala	Leu	Met	Gly	
1095						1100					1105				
cac	cta	agt	tgt	gac	aca	aag	gaa	gaa	aga	aaa	atc	aag	ggt	gtt	3447
His	Leu	Ser	Cys	Asp	Thr	Lys	Glu	Glu	Arg	Lys	Ile	Lys	Gly	Val	
1110						1115					1120				
att	tcc	ata	ccc	cgt	ttg	caa	gca	gaa	gcc	aga	agt	gag	atc	ctc	3492
Ile	Ser	Ile	Pro	Arg	Leu	Gln	Ala	Glu	Ala	Arg	Ser	Glu	Ile	Leu	
1125						1130					1135				
gcc	cac	tgg	tcg	cct	gcc	aaa	ctg	ctt	ctc	caa	atg	gac	tca	tct	3537
Ala	His	Trp	Ser	Pro	Ala	Lys	Leu	Leu	Leu	Gln	Met	Asp	Ser	Ser	
1140						1145					1150				
gct	aca	gct	tat	ggc	tcc	aca	gtt	tcc	aag	agg	gtg	gca	tgg	cat	3582
Ala	Thr	Ala	Tyr	Gly	Ser	Thr	Val	Ser	Lys	Arg	Val	Ala	Trp	His	
1155						1160					1165				
tat	gat	gaa	gag	aag	att	gaa	ttt	gaa	tgg	aac	aca	ggc	acc	aat	3627
Tyr	Asp	Glu	Glu	Lys	Ile	Glu	Phe	Glu	Trp	Asn	Thr	Gly	Thr	Asn	
1170						1175					1180				
gta	gat	acc	aaa	aaa	atg	act	tcc	aat	ttc	cct	gtg	gat	ctc	tcc	3672
Val	Asp	Thr	Lys	Lys	Met	Thr	Ser	Asn	Phe	Pro	Val	Asp	Leu	Ser	
1185						1190					1195				
gat	tat	cct	aag	agc	ttg	cat	atg	tat	gct	aat	aga	ctc	ctg	gat	3717
Asp	Tyr	Pro	Lys	Ser	Leu	His	Met	Tyr	Ala	Asn	Arg	Leu	Leu	Asp	
1200						1205					1210				
cac	aga	gtc	cct	caa	aca	gac	atg	act	ttc	cg	cac	gtg	ggt	tcc	3762
His	Arg	Val	Pro	Gln	Thr	Asp	Met	Thr	Phe	Arg	His	Val	Gly	Ser	
1215						1220					1225				
aaa	tta	ata	gtt	gca	atg	agc	tca	tgg	ctt	cag	aag	gca	tct	ggg	3807
Lys	Leu	Ile	Val	Ala	Met	Ser	Ser	Trp	Leu	Gln	Lys	Ala	Ser	Gly	
1230						1235					1240				
agt	ctt	cct	tat	acc	cag	act	ttg	caa	gac	cac	ctc	aat	agc	ctg	3852
Ser	Leu	Pro	Tyr	Thr	Gln	Thr	Leu	Gln	Asp	His	Leu	Asn	Ser	Leu	
1245						1250					1255				
aag	gag	ttc	aac	ctc	cag	aac	atg	gga	ttg	cca	gac	ttc	cac	atc	3897
Lys	Glu	Phe	Asn	Leu	Gln	Asn	Met	Gly	Leu	Pro	Asp	Phe	His	Ile	
1260						1265					1270				
cca	gaa	aac	ctc	ttc	tta	aaa	agc	gat	ggc	cg	gtc	aaa	tat	acc	3942
Pro	Glu	Asn	Leu	Phe	Leu	Lys	Ser	Asp	Gly	Arg	Val	Lys	Tyr	Thr	
1275						1280					1285				
ttg	aac	aag	aac	agt	ttg	aaa	att	gag	att	cct	ttg	cct	ttt	ggt	3987

Leu	Asn	Lys	Asn	Ser	Leu	Lys	Ile	Glu	Ile	Pro	Leu	Pro	Phe	Gly	
1290					1295					1300					
ggc	aaa	tcc	tcc	aga	gat	cta	aag	atg	tta	gag	act	gtt	agg	aca	4032
Gly	Lys	Ser	Ser	Arg	Asp	Leu	Lys	Met	Leu	Glu	Thr	Val	Arg	Thr	
1305						1310					1315				
cca	gcc	ctc	cac	tcc	aag	tct	gtg	gga	tcc	cat	ctg	cca	tct	cga	4077
Pro	Ala	Leu	His	Phe	Lys	Ser	Val	Gly	Phe	His	Leu	Pro	Ser	Arg	
1320						1325					1330				
gag	ttc	caa	gtc	cct	act	ttt	acc	att	ccc	aag	ttg	tat	caa	ctg	4122
Glu	Phe	Gln	Val	Pro	Thr	Phe	Thr	Ile	Pro	Lys	Leu	Tyr	Gln	Leu	
1335						1340					1345				
caa	gtg	cct	ctc	ctg	ggt	gtt	cta	gac	ctc	tcc	acg	aat	gtc	tac	4167
Gln	Val	Pro	Leu	Leu	Gly	Val	Leu	Asp	Leu	Ser	Thr	Asn	Val	Tyr	
1350						1355					1360				
agc	aac	ttg	tac	aac	tgg	tcc	gcc	tcc	tac	agt	ggt	ggc	aac	acc	4212
Ser	Asn	Leu	Tyr	Asn	Trp	Ser	Ala	Ser	Tyr	Ser	Gly	Gly	Asn	Thr	
1365						1370					1375				
agc	aca	gac	cat	tcc	agc	ctt	cg	gct	cgt	tac	cac	atg	aag	gct	4257
Ser	Thr	Asp	His	Phe	Ser	Leu	Arg	Ala	Arg	Tyr	His	Met	Lys	Ala	
1380						1385					1390				
gac	tct	gtg	gtt	gac	ctg	ctt	tcc	tac	aat	gtg	caa	gga	tct	gga	4302
Asp	Ser	Val	Val	Asp	Leu	Leu	Ser	Tyr	Asn	Val	Gln	Gly	Ser	Gly	
1395						1400					1405				
gaa	aca	aca	tat	gac	cac	aag	aat	acg	tcc	aca	cta	tca	tgt	gat	4347
Glu	Thr	Thr	Tyr	Asp	His	Lys	Asn	Thr	Phe	Thr	Ieu	Ser	Cys	Asp	
1410						1415					1420				
ggg	tct	cta	cgc	cac	aaa	ttt	cta	gat	tcg	aat	atc	aaa	ttc	agt	4392
Gly	Ser	Leu	Arg	His	Lys	Phe	Leu	Asp	Ser	Asn	Ile	Lys	Phe	Ser	
1425						1430					1435				
cat	gta	gaa	aaa	ctt	gga	aac	aac	cca	gtc	tca	aaa	ggt	tta	cta	4437
His	Val	Glu	Lys	Leu	Gly	Asn	Asn	Pro	Val	Ser	Lys	Gly	Leu	Leu	
1440						1445					1450				
ata	tcc	gat	gca	tct	agt	tcc	tgg	gga	cca	cag	atg	tct	gct	tca	4482
Ile	Phe	Asp	Ala	Ser	Ser	Ser	Trp	Gly	Pro	Gln	Met	Ser	Ala	Ser	
1455						1460					1465				
gtt	cat	ttg	gac	tcc	aaa	aag	aaa	cag	cat	ttg	ttt	gtc	aaa	gaa	4527
Val	His	Leu	Asp	Ser	Lys	Lys	Lys	Gln	His	Leu	Phe	Val	Lys	Glu	
1470						1475					1480				
gtc	aag	att	gat	ggg	cag	tcc	aga	gtc	tct	tcg	ttc	tat	gct	aaa	4572
Val	Lys	Ile	Asp	Gly	Gln	Phe	Arg	Val	Ser	Ser	Phe	Tyr	Ala	Lys	
1485						1490					1495				
ggc	aca	tat	ggc	ctg	tct	tgt	cag	agg	gat	cct	aac	act	ggc	cg	4617
Gly	Thr	Tyr	Gly	Leu	Ser	Cys	Gln	Arg	Asp	Pro	Asn	Thr	Gly	Arg	
1500						1505					1510				
ctc	aat	gga	gag	tcc	aac	ctg	agg	ttt	aac	tcc	tcc	tac	ctc	caa	4662

Leu	Asn	Gly	Glu	Ser	Asn	Leu	Arg	Phe	Asn	Ser	Ser	Tyr	Leu	Gln	
1515						1520						1525			
ggc	acc	aac	cag	ata	aca	gga	aga	tat	gaa	gat	gga	acc	ctc	tcc	4707
Gly	Thr	Asn	Gln	Ile	Thr	Gly	Arg	Tyr	Glu	Asp	Gly	Thr	Leu	Ser	
1530						1535						1540			
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Leu	Thr	Ser	Thr	Ser	Asp	Leu	Gln	Ser	Gly	Ile	Ile	Lys	Asn	Thr	
1545						1550						1555			
gct	tcc	cta	aag	tat	gag	aac	tac	gag	ctg	act	tta	aaa	tct	gac	4797
Ala	Ser	Leu	Lys	Tyr	Glu	Asn	Tyr	Glu	Leu	Thr	Leu	Lys	Ser	Asp	
1560						1565						1570			
acc	aat	ggg	aag	tat	aag	aac	ttt	gcc	act	tct	aac	aag	atg	gat	4842
Thr	Asn	Gly	Lys	Tyr	Lys	Asn	Phe	Ala	Thr	Ser	Asn	Lys	Met	Asp	
1575						1580						1585			
atg	acc	ttc	tct	aag	caa	aat	gca	ctg	ctg	cgt	tct	gaa	tat	cag	4887
Met	Thr	Phe	Ser	Lys	Gln	Asn	Ala	Leu	Leu	Arg	Ser	Glu	Tyr	Gln	
1590						1595						1600			
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Ala	Asp	Tyr	Glu	Ser	Leu	Arg	Phe	Phe	Ser	Leu	Leu	Ser	Gly	Ser	
1605						1610						1615			
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Leu	Asn	Ser	His	Gly	Leu	Glu	Leu	Asn	Ala	Asp	Ile	Leu	Gly	Thr	
1620						1625						1630			
gac	aaa	att	aat	agt	ggt	gct	cac	aag	gcg	aca	cta	agg	att	ggc	5022
Asp	Lys	Ile	Asn	Ser	Gly	Ala	His	Lys	Ala	Thr	Leu	Arg	Ile	Gly	
1635						1640						1645			
caa	gat	gga	ata	tct	acc	agt	gca	acg	acc	aac	ttg	aag	tgt	agt	5067
Gln	Asp	Gly	Ile	Ser	Thr	Ser	Ala	Thr	Thr	Asn	Leu	Lys	Cys	Ser	
1650						1655						1660			
ctc	ctg	gtg	ctg	gag	aat	qag	ctg	aat	gca	gag	ctt	ggc	ctc	tct	5112
Leu	Leu	Val	Leu	Glu	Asn	Glu	Leu	Asn	Ala	Glu	Leu	Gly	Leu	Ser	
1665						1670						1675			
ggg	gca	tct	atg	aaa	tta	aca	aca	aat	ggc	cgc	ttc	agg	gaa	cac	5157
Gly	Ala	Ser	Met	Lys	Leu	Thr	Thr	Asn	Gly	Arg	Phe	Arg	Glu	His	
1680						1685						1690			
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Asn	Ala	Lys	Phe	Ser	Leu	Asp	Gly	Lys	Ala	Ala	Leu	Thr	Glu	Leu	
1695						1700						1705			
tca	ctg	gga	agt	gct	tat	cag	gcc	atg	att	ctg	ggt	gtc	gac	agc	5247
Ser	Leu	Gly	Ser	Ala	Tyr	Gln	Ala	Met	Ile	Leu	Gly	Val	Asp	Ser	
1710						1715						1720			
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Lys	Asn	Ile	Phe	Asn	Phe	Lys	Val	Ser	Gln	Glu	Gly	Leu	Lys	Leu	
1725						1730						1735			
tca	aat	gac	atg	atg	ggc	tca	tat	gct	gaa	atg	aaa	ttt	gac	cac	5337

Ser	Asn	Asp	Met	Met	Gly	Ser	Tyr	Ala	Glu	Met	Lys	Phe	Asp	His	
1740					1745					1750					
aca	aac	agt	ctg	aac	att	gca	ggc	tta	tca	ctg	gac	ttc	tct	tca	5382
Thr	Asn	Ser	Leu	Asn	Ile	Ala	Gly	Leu	Ser	Leu	Asp	Phe	Ser	Ser	
1755					1760					1765					
aaa	ctt	gac	aac	att	tac	agc	tct	gac	aag	ttt	tat	aag	caa	act	5427
Lys	Leu	Asp	Asn	Ile	Tyr	Ser	Ser	Asp	Lys	Phe	Tyr	Lys	Gln	Thr	
1770					1775					1780					
gtt	aat	tta	cag	cta	cag	ccc	tat	tct	ctg	gta	act	act	tta	aac	5472
Val	Asn	Leu	Gln	Leu	Gln	Pro	Tyr	Ser	Leu	Val	Thr	Thr	Leu	Asn	
1785					1790					1795					
agt	gac	ctg	aaa	tac	aat	gct	ctg	gat	ctc	acc	aac	aat	ggg	aaa	5517
Ser	Asp	Leu	Lys	Tyr	Asn	Ala	Leu	Asp	Leu	Thr	Asn	Asn	Gly	Lys	
1800					1805					1810					
cta	cgg	cta	gaa	ccc	ctg	aag	ctg	cat	gtg	gct	ggt	aac	cta	aaa	5562
Leu	Arg	Leu	Glu	Pro	Leu	Lys	Leu	His	Val	Ala	Gly	Asn	Leu	Lys	
1815					1820					1825					
gga	gcc	tac	caa	aat	aat	gaa	ata	aaa	cac	atc	tat	gcc	atc	tct	5607
Gly	Ala	Tyr	Gln	Asn	Asn	Glu	Ile	Lys	His	Ile	Tyr	Ala	Ile	Ser	
1830					1835					1840					
tct	gct	gcc	tta	tca	gca	agc	tat	aaa	gca	gac	act	gtt	gct	aag	5652
Ser	Ala	Ala	Leu	Ser	Ala	Ser	Tyr	Lys	Ala	Asp	Thr	Val	Ala	Lys	
1845					1850					1855					
gtt	cag	ggt	gtg	gag	ttt	agc	cat	cg	ctc	aac	aca	gac	atc	gct	5697
Val	Gln	Gly	Val	Glu	Phe	Ser	His	Arg	Leu	Asn	Thr	Asp	Ile	Ala	
1860					1865					1870					
ggg	ctg	gct	tca	gcc	att	gac	atg	agc	aca	aac	tat	aat	tca	gac	5742
Gly	Leu	Ala	Ala	Ser	Ala	Ile	Asp	Met	Ser	Thr	Asn	Tyr	Asn	Ser	Asp
1875					1880					1885					
tca	ctg	cat	ttc	agc	aat	gtc	tcc	cgt	tct	gta	atg	gcc	ccg	ttt	5787
Ser	Leu	His	Phe	Ser	Asn	Val	Phe	Arg	Ser	Val	Met	Ala	Pro	Phe	
1890					1895					1900					
acc	atg	acc	atc	gat	gca	cat	aca	aat	ggc	aat	ggg	aaa	ctc	gct	5832
Thr	Met	Thr	Ile	Asp	Ala	His	Thr	Asn	Gly	Asn	Gly	Lys	Leu	Ala	
1905					1910					1915					
ctc	tgg	gga	gaa	cat	act	ggg	cag	ctg	tat	agc	aaa	ttc	ctg	ttg	5877
Leu	Trp	Gly	Glu	His	Thr	Gly	Gln	Leu	Tyr	Ser	Lys	Phe	Leu	Leu	
1920					1925					1930					
aaa	gca	gaa	cct	ctg	gca	ttt	act	ttc	tct	cat	gat	tac	aaa	ggc	5922
Lys	Ala	Glu	Pro	Leu	Ala	Phe	Thr	Phe	Ser	His	Asp	Tyr	Lys	Gly	
1935					1940					1945					
tcc	aca	agt	cat	cat	ctc	gtg	tct	agg	aaa	agc	atc	agt	gca	gct	5967
Ser	Thr	Ser	His	His	Leu	Val	Ser	Arg	Lys	Ser	Ile	Ser	Ala	Ala	
1950					1955					1960					
ctt	gaa	cac	aaa	gtc	agt	gcc	ctg	ctt	act	cca	gct	gag	cag	aca	6012

Leu	Glu	His	Lys	Val	Ser	Ala	Leu	Leu	Thr	Pro	Ala	Glu	Gln	Thr	
1965						1970					1975				
ggc acc	tgg aaa ctc aag acc		caa ttt aac aac aat		gaa tac agc							6057			
Gly	Thr	Trp	Lys	Leu	Lys	Thr	Gln	Phe	Asn	Asn	Asn	Glu	Tyr	Ser	
1980						1985					1990				
cag gac	ttg gat gct tac aac		act aaa gat aaa att		ggc gtg gag							6102			
Gln	Asp	Leu	Asp	Ala	Tyr	Asn	Thr	Lys	Asp	Lys	Ile	Gly	Val	Glu	
1995						2000					2005				
ctt act	gga cga act ctg gct		gac cta act cta cta		gac tcc cca							6147			
Leu	Thr	Gly	Arg	Thr	Leu	Ala	Asp	Leu	Thr	Leu	Leu	Asp	Ser	Pro	
2010						2015					2020				
att aaa	gtg cca ctt tta ctc		agt gag ccc atc aat		atc att gat							6192			
Ile	Lys	Val	Pro	Leu	Leu	Leu	Ser	Glu	Pro	Ile	Asn	Ile	Ile	Asp	
2025						2030					2035				
gct tta	gag atg aga gat gcc		gtt gag aag ccc caa		gaa ttt aca							6237			
Ala	Leu	Glu	Met	Arg	Asp	Ala	Val	Glu	Lys	Pro	Gln	Glu	Phe	Thr	
2040						2045					2050				
att gtt	gct ttt gta aag tat		gat aaa aac caa gat		gtt cac tcc							6282			
Ile	Val	Ala	Phe	Val	Lys	Tyr	Asp	Lys	Asn	Gln	Asp	Val	His	Ser	
2055						2060					2065				
att aac	ctc cca ttt ttt gag		acc ttg caa gaa tat		ttt gag agg							6327			
Ile	Asn	Leu	Pro	Phe	Phe	Glu	Thr	Leu	Gln	Glu	Tyr	Phe	Glu	Arg	
2070						2075					2080				
aat cga	caa acc att ata gtt		gta ctg gaa aac gta		cag aga aac							6372			
Asn	Arg	Gln	Thr	Ile	Ile	Val	Val	Leu	Glu	Asn	Val	Gln	Arg	Asn	
2085						2090					2095				
ctg aag	cac atc aat att gat		caa ttt gta aga aaa		tac aga gca							6417			
Leu	Lys	His	Ile	Asn	Ile	Asp	Gln	Phe	Val	Arg	Lys	Tyr	Arg	Ala	
2100						2105					2110				
gcc ctg	gga aaa ctc cca cag		caa gct aat gat tat		ctg aat tca							6462			
Ala	Leu	Gly	Lys	Leu	Pro	Gln	Gln	Ala	Asn	Asp	Tyr	Leu	Asn	Ser	
2115						2120					2125				
ttc aat	tgg gag aga caa gtt		tca cat gcc aag gag		aaa ctg act							6507			
Phe	Asn	Trp	Glu	Arg	Gln	Val	Ser	His	Ala	Lys	Glu	Lys	Leu	Thr	
2130						2135					2140				
gct ctc	aca aaa aag tat aga		att aca gaa aat gat		ata caa att							6552			
Ala	Leu	Thr	Lys	Lys	Tyr	Arg	Ile	Thr	Glu	Asn	Asp	Ile	Gln	Ile	
2145						2150					2155				
gca tta	gat gat gcc aaa atc		aac ttt aat gaa aaa		cta tct caa							6597			
Ala	Leu	Asp	Asp	Ala	Lys	Ile	Asn	Phe	Asn	Glu	Lys	Leu	Ser	Gln	
2160						2165					2170				
ctg cag	aca tat atg ata caa		ttt gat cag tat att		aaa gat agt							6642			
Leu	Gln	Thr	Tyr	Met	Ile	Gln	Phe	Asp	Gln	Tyr	Ile	Lys	Asp	Ser	
2175						2180					2185				
tat gat	tta cat gat ttg aaa		ata gct att gct aat		att att gat							6687			

Tyr	Asp	Leu	His	Asp	Leu	Lys	Ile	Ala	Ile	Ala	Asn	Ile	Ile	Asp	
2190						2195					2200				
gaa	atc	att	gaa	aaa	tta	aaa	agt	ctt	gat	gag	cac	tat	cat	atc	6732
Glu	Ile	Ile	Glu	Lys	Leu	Lys	Ser	Leu	Asp	Glu	His	Tyr	His	Ile	
2205						2210					2215				
cgt	gta	aat	tta	gta	aaa	aca	atc	cat	gat	cta	cat	ttg	ttt	att	6777
Arg	Val	Asn	Leu	Val	Lys	Thr	Ile	His	Asp	Leu	His	Leu	Phe	Ile	
2220						2225					2230				
gaa	aat	att	gat	ttt	aac	aaa	agt	gga	agt	agt	act	gca	tcc	tgg	6822
Glu	Asn	Ile	Asp	Phe	Asn	Lys	Ser	Gly	Ser	Ser	Thr	Ala	Ser	Trp	
2235						2240					2245				
att	caa	aat	gtg	gat	act	aag	tac	caa	atc	aga	atc	cag	ata	caa	6867
Ile	Gln	Asn	Val	Asp	Thr	Lys	Tyr	Gln	Ile	Arg	Ile	Gln	Ile	Gln	
2250						2255					2260				
gaa	aaa	ctg	cag	cag	ctt	aag	aga	cac	ata	cag	aat	ata	gac	atc	6912
Glu	Lys	Leu	Gln	Gln	Leu	Lys	Arg	His	Ile	Gln	Asn	Ile	Asp	Ile	
2265						2270					2275				
cag	cac	cta	gct	gga	aag	tta	aaa	caa	cac	att	gag	gct	att	gat	6957
Gln	His	Leu	Ala	Gly	Lys	Leu	Lys	Gln	His	Ile	Glu	Ala	Ile	Asp	
2280						2285					2290				
gtt	aga	gtg	ctt	tta	gat	caa	ttg	gga	act	aca	att	tca	ttt	gaa	7002
Val	Arg	Val	Leu	Leu	Asp	Gln	Leu	Gly	Thr	Thr	Ile	Ser	Phe	Glu	
2295						2300					2305				
aga	ata	aat	gat	gtt	ctt	gag	cat	gtc	aaa	cac	ttt	gtt	ata	aat	7047
Arg	Ile	Asn	Asp	Val	Leu	Glu	His	Val	Lys	His	Phe	Val	Ile	Asn	
2310						2315					2320				
ctt	att	ggg	gat	ttt	gaa	gta	gct	gag	aaa	atc	aat	gcc	ttc	aga	7092
Leu	Ile	Gly	Asp	Phe	Glu	Val	Ala	Glu	Lys	Ile	Asn	Ala	Phe	Arg	
2325						2330					2335				
gcc	aaa	gtc	cat	gag	tta	atc	gag	agg	tat	gaa	gta	gac	caa	caa	7137
Ala	Lys	Val	His	Glu	Leu	Ile	Glu	Arg	Tyr	Glu	Val	Asp	Gln	Gln	
2340						2345					2350				
atc	cag	gtt	tta	atg	gat	aaa	tta	gta	gag	ttg	gcc	cac	caa	tac	7182
Ile	Gln	Val	Leu	Met	Asp	Lys	Leu	Val	Glu	Leu	Ala	His	Gln	Tyr	
2355						2360					2365				
aag	ttg	aag	gag	act	att	cag	aag	cta	agc	aat	gtc	cta	caa	caa	7227
Lys	Leu	Lys	Glu	Thr	Ile	Gln	Lys	Leu	Ser	Asn	Val	Leu	Gln	Gln	
2370						2375					2380				
gtt	aag	ata	aaa	gat	tac	ttt	gag	aaa	ttg	gtt	gga	ttt	att	gat	7272
Val	Lys	Ile	Lys	Asp	Tyr	Phe	Glu	Lys	Leu	Val	Gly	Phe	Ile	Asp	
2385						2390					2395				
gat	gct	gtc	aag	aag	ctt	aat	gaa	tta	tct	ttt	aaa	aca	ttc	att	7317
Asp	Ala	Val	Lys	Lys	Leu	Asn	Glu	Leu	Ser	Phe	Lys	Thr	Phe	Ile	
2400						2405					2410				
gaa	gat	gtt	aac	aaa	ttc	ctt	gac	atg	ttg	ata	aag	aaa	tta	aag	7362

Glu	Asp	Val	Asn	Lys	Phe	Leu	Asp	Met	Leu	Ile	Lys	Lys	Leu	Lys	
2415					2420						2425				
tca	ttt	gat	tac	cac	cag	ttt	gta	gat	gaa	acc	aat	gac	aaa	atc	7407
Ser	Phe	Asp	Tyr	His	Gln	Phe	Val	Asp	Glu	Thr	Asn	Asp	Lys	Ile	
2430					2435						2440				
cgt	gag	gtg	act	cag	aga	ctc	aat	ggt	gaa	att	cag	gct	ctg	gaa	7452
Arg	Glu	Val	Thr	Gln	Arg	Leu	Asn	Gly	Glu	Ile	Gln	Ala	Leu	Glu	
2445					2450						2455				
cta	cca	caa	aaa	gct	gaa	gca	tta	aaa	ctg	ttt	tta	gag	gaa	acc	7497
Leu	Pro	Gln	Lys	Ala	Glu	Ala	Leu	Lys	Leu	Phe	Leu	Glu	Glu	Thr	
2460					2465						2470				
aag	gcc	aca	gtt	gca	gtg	tat	ctg	gaa	agc	cta	cag	gac	acc	aaa	7542
Lys	Ala	Thr	Val	Ala	Val	Tyr	Leu	Glu	Ser	Leu	Gln	Asp	Thr	Lys	
2475					2480						2485				
ata	acc	tta	atc	atc	aat	tgg	tta	cag	gag	gct	tta	agt	tca	gca	7587
Ile	Thr	Leu	Ile	Ile	Asn	Trp	Leu	Gln	Glu	Ala	Leu	Ser	Ser	Ala	
2490					2495						2500				
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Ser	Leu	Ala	His	Met	Lys	Ala	Lys	Phe	Arg	Glu	Thr	Leu	Glu	Asp	
2505					2510						2515				
aca	cga	gac	cga	atg	tat	caa	atg	gac	att	cag	cag	gaa	ctt	caa	7677
Thr	Arg	Asp	Arg	Met	Tyr	Gln	Met	Asp	Ile	Gln	Gln	Glu	Leu	Gln	
2520					2525						2530				
cga	tac	ctg	tct	ctg	gta	ggc	cag	gtt	tat	agc	aca	ctt	gtc	acc	7722
Arg	Tyr	Leu	Ser	Leu	Val	Gly	Gln	Val	Tyr	Ser	Thr	Leu	Val	Thr	
2535					2540						2545				
tac	att	tct	gat	tgg	tgg	act	ctt	gct	gct	aag	aac	ctt	act	gac	7767
Tyr	Ile	Ser	Asp	Trp	Trp	Thr	Leu	Ala	Ala	Lys	Asn	Leu	Thr	Asp	
2550					2555						2560				
ttt	gca	gag	caa	tat	tct	atc	caa	gat	tgg	gct	aaa	cgt	atg	aaa	7812
Phe	Ala	Glu	Gln	Tyr	Ser	Ile	Gln	Asp	Trp	Ala	Lys	Arg	Met	Lys	
2565					2570						2575				
gca	ttg	gta	gag	caa	ggg	ttc	act	gtt	cct	gaa	atc	aag	acc	atc	7857
Ala	Leu	Val	Glu	Gln	Gly	Phe	Thr	Val	Pro	Glu	Ile	Lys	Thr	Ile	
2580					2585						2590				
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Leu	Gly	Thr	Met	Pro	Ala	Phe	Glu	Val	Ser	Leu	Gln	Ala	Leu	Gln	
2595					2600						2605				
aaa	gct	acc	ttc	cag	aca	cct	gat	ttt	ata	gtc	ccc	cta	aca	gat	7947
Lys	Ala	Thr	Phe	Gln	Thr	Pro	Asp	Phe	Ile	Val	Pro	Leu	Thr	Asp	
2610					2615						2620				
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Leu	Arg	Ile	Pro	Ser	Val	Gln	Ile	Asn	Phe	Lys	Asp	Leu	Lys	Asn	
2625					2630						2635				
ata	aaa	atc	cca	tcc	agg	ttt	tcc	aca	cca	gaa	ttt	acc	atc	ttt	8037

Ile	Lys	Ile	Pro	Ser	Arg	Phe	Ser	Thr	Pro	Glu	Phe	Thr	Ile	Leu	
2640						2645					2650				
aac	acc	ttc	cac	att	cct	tcc	ttt	aca	att	gac	ttt	gta	gaa	atg	8082
Asn	Thr	Phe	His	Ile	Pro	Ser	Phe	Thr	Ile	Asp	Phe	Val	Glu	Met	
2655						2660					2665				
aaa	gta	aag	atc	atc	aga	acc	att	gac	cag	atg	ctg	aac	agt	gag	8127
Lys	Val	Lys	Ile	Ile	Arg	Thr	Ile	Asp	Gln	Met	Leu	Asn	Ser	Glu	
2670						2675					2680				
ctg	cag	tgg	ccc	gtt	cca	gat	ata	tat	ctc	agg	gat	ctg	aag	gtg	8172
Leu	Gln	Trp	Pro	Val	Pro	Asp	Ile	Tyr	Leu	Arg	Asp	Leu	Lys	Val	
2685						2690					2695				
gag	gac	att	cct	cta	gcg	aga	atc	acc	ctg	cca	gac	ttc	cgt	tta	8217
Glu	Asp	Ile	Pro	Leu	Ala	Arg	Ile	Thr	Leu	Pro	Asp	Phe	Arg	Leu	
2700						2705					2710				
cca	gaa	atc	gca	att	cca	gaa	ttc	ata	atc	cca	act	ctc	aac	ctt	8262
Pro	Glu	Ile	Ala	Ile	Pro	Glu	Phe	Ile	Ile	Pro	Thr	Leu	Asn	Leu	
2715						2720					2725				
aat	gat	ttt	caa	gtt	cct	gac	ctt	cac	ata	cca	gaa	ttc	cag	ctt	8307
Asn	Asp	Phe	Gln	Val	Pro	Asp	Leu	His	Ile	Pro	Glu	Phe	Gln	Leu	
2730						2735					2740				
ccc	cac	atc	tca	cac	aca	att	gaa	gta	cct	act	ttt	ggc	aag	cta	8352
Pro	His	Ile	Ser	His	Thr	Ile	Glu	Val	Pro	Thr	Phe	Gly	Lys	Leu	
2745						2750					2755				
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Tyr	Ser	Ile	Leu	Lys	Ile	Gln	Ser	Pro	Leu	Phe	Thr	Leu	Asp	Ala	
2760						2765					2770				
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Asn	Ala	Asp	Ile	Gly	Asn	Gly	Thr	Thr	Ser	Ala	Asn	Glu	Ala	Gly	
2775						2780					2785				
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Ile	Ala	Ala	Ser	Ile	Thr	Ala	Lys	Gly	Glu	Ser	Lys	Leu	Glu	Val	
2790						2795					2800				
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Leu	Asn	Phe	Asp	Phe	Gln	Ala	Asn	Ala	Gln	Leu	Ser	Asn	Pro	Lys	
2805						2810					2815				
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Ile	Asn	Pro	Leu	Ala	Leu	Lys	Glu	Ser	Val	Lys	Phe	Ser	Ser	Lys	
2820						2825					2830				
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Tyr	Leu	Arg	Thr	Glu	His	Gly	Ser	Glu	Met	Leu	Phe	Phe	Gly	Asn	
2835						2840					2845				
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Ala	Ile	Glu	Gly	Lys	Ser	Asn	Thr	Val	Ala	Ser	Leu	His	Thr	Glu	
2850						2855					2860				
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Lys	Asn	Thr	Leu	Glu	Leu	Ser	Asn	Gly	Val	Ile	Val	Lys	Ile	Asn		
2865						2870						2875				
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Asn	Gln	Leu	Thr	Leu	Asp	Ser	Asn	Thr	Lys	Tyr	Phe	His	Lys	Leu		
2880						2885						2890				
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Asn	Ile	Pro	Lys	Leu	Asp	Phe	Ser	Ser	Gln	Ala	Asp	Leu	Arg	Asn		
2895						2900						2905				
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Glu	Ile	Lys	Thr	Leu	Leu	Lys	Ala	Gly	His	Ile	Ala	Trp	Thr	Ser		
2910						2915						2920				
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Ser	Gly	Lys	Gly	Ser	Trp	Lys	Trp	Ala	Cys	Pro	Arg	Phe	Ser	Asp		
2925						2930						2935				
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Glu	Gly	Thr	His	Glu	Ser	Gln	Ile	Ser	Phe	Thr	Ile	Glu	Gly	Pro		
2940						2945						2950				
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Leu	Thr	Ser	Phe	Gly	Leu	Ser	Asn	Lys	Ile	Asn	Ser	Lys	His	Leu		
2955						2960						2965				
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Arg	Val	Asn	Gln	Asn	Leu	Val	Tyr	Glu	Ser	Gly	Ser	Leu	Asn	Phe		
2970						2975						2980				
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Ser	Lys	Leu	Glu	Ile	Gln	Ser	Gln	Val	Asp	Ser	Gln	His	Val	Gly		
2985						2990						2995				
cac	agt	gtt	cta	act	gct	aaa	ggc	atg	gca	ctg	ttt	gga	gaa	ggg	9117	
His	Ser	Val	Leu	Thr	Ala	Lys	Gly	Met	Ala	Leu	Phe	Gly	Glu	Gly		
3000						3005						3010				
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Lys	Ala	Glu	Phe	Thr	Gly	Arg	His	Asp	Ala	His	Leu	Asn	Gly	Lys		
3015						3020						3025				
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3030						3035						3040				
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Phe	Glu	Ile	Thr	Ala	Ser	Thr	Asn	Asn	Glu	Gly	Asn	Leu	Lys	Val		
3045						3050						3055				
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Arg	Phe	Pro	Leu	Arg	Leu	Thr	Gly	Lys	Ile	Asp	Phe	Leu	Asn	Asn		
3060						3065						3070				
tat	gca	ctg	ttt	ctg	agt	ccc	agt	gcc	cag	caa	gca	agt	tgg	caa	9342	
Tyr	Ala	Leu	Phe	Leu	Ser	Pro	Ser	Ala	Gln	Gln	Ala	Ser	Trp	Gln		
3075						3080						3085				
gta	agt	gct	agg	ttc	aat	cag	tat	aag	tac	aac	caa	aat	ttc	tct	9387	

Val	Ser	Ala	Arg	Phe	Asn	Gln	Tyr	Lys	Tyr	Asn	Gln	Asn	Phe	Ser	
3090						3095					3100				
gct	gga	aac	aac	gag	aac	att	atg	gag	gcc	cat	gta	gga	ata	aat	9432
Ala	Gly	Asn	Asn	Glu	Asn	Ile	Met	Glu	Ala	His	Val	Gly	Ile	Asn	
3105						3110					3115				
gga	gaa	gca	aat	ctg	gat	ttc	tta	aac	att	cct	tta	aca	att	cct	9477
Gly	Glu	Ala	Asn	Leu	Asp	Phe	Leu	Asn	Ile	Pro	Leu	Thr	Ile	Pro	
3120						3125					3130				
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Lys	Asn	Lys	His	Arg	His	Ser	Ile	Thr	Asn	Pro	Leu	Ala	Val	Leu	
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Pro	Val	Val	Asn	Val	Glu	Val	Ser	Pro	Phe	Thr	Ile	Glu	Met	Ser	
3255						3260					3265				
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3270						3275					3280				
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Ser	Ile	Leu	Gly	Ser	Asp	Val	Arg	Val	Pro	Ser	Tyr	Thr	Leu	Ile	
3285						3290					3295				
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Leu	Pro	Ser	Leu	Glu	Leu	Pro	Val	Leu	His	Val	Pro	Arg	Asn	Leu	
3300						3305					3310				
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3975						3980					3985				
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Arg	Tyr	Gln	Lys	Asp	Lys	Lys	Gly	Ile	Ser	Thr	Ser	Ala	Ala	Ser	
3990					3995						4000				
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4005					4010						4015				
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4170					4175						4180				
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4245						4250					4255				
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4275						4280					4285				
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4290						4295					4300				
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Gln	Asn	Glu	Leu	Gln	Glu	Ala	Ser	Gln	Glu	Leu	Gln	Gln	Ile	His	
4365						4370					4375				
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Gln	Tyr	Ile	Met	Ala	Leu	Arg	Glu	Glu	Tyr	Phe	Asp	Pro	Ser	Ile	
4380						4385					4390				
gtt	ggc	tgg	aca	gtg	aaa	tat	tat	gaa	ctt	gaa	gaa	aag	ata	gtc	13302
Val	Gly	Trp	Thr	Val	Lys	Tyr	Tyr	Glu	Leu	Glu	Glu	Lys	Ile	Val	
4395						4400					4405				
agt	ctg	atc	aag	aac	ctg	tta	gtt	gct	ctt	aag	gac	ttc	cat	tct	13347
Ser	Leu	Ile	Lys	Asn	Leu	Leu	Val	Ala	Leu	Lys	Asp	Phe	His	Ser	
4410						4415					4420				
gaa	tat	att	gtc	agt	gcc	tct	aac	ttt	act	tcc	caa	ctc	tca	agt	13392
Glu	Tyr	Ile	Val	Ser	Ala	Ser	Asn	Phe	Thr	Ser	Gln	Leu	Ser	Ser	
4425						4430					4435				
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Gln	Val	Glu	Gln	Phe	Leu	His	Arg	Asn	Ile	Gln	Glu	Tyr	Leu	Ser	
4440					4445					4450					
atc	ctt	acc	gat	cca	gat	gga	aaa	ggg	aaa	gag	aag	att	gca	gag	13482
Ile	Leu	Thr	Asp	Pro	Asp	Gly	Lys	Gly	Lys	Glu	Lys	Ile	Ala	Glu	
4455					4460					4465					
ctt	tct	gcc	act	gct	cag	gaa	ata	att	aaa	agc	cag	gcc	att	gcg	13527
Leu	Ser	Ala	Thr	Ala	Gln	Glu	Ile	Ile	Lys	Ser	Gln	Ala	Ile	Ala	
4470					4475					4480					
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Thr	Lys	Lys	Ile	Ile	Ser	Asp	Tyr	His	Gln	Gln	Phe	Arg	Tyr	Lys	
4485					4490					4495					
ctg	caa	gat	ttt	tca	gac	caa	ctc	tct	gat	tac	tat	gaa	aaa	ttt	13617
Leu	Gln	Asp	Phe	Ser	Asp	Gln	Leu	Ser	Asp	Tyr	Tyr	Glu	Lys	Phe	
4500					4505					4510					
att	gct	gaa	tcc	aaa	aga	ttt	att	gac	ctg	tcc	att	caa	aac	tac	13662
Ile	Ala	Glu	Ser	Lys	Arg	Leu	Ile	Asp	Leu	Ser	Ile	Gln	Asn	Tyr	
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His	Thr	Phe	Ieu	Ile	Tyr	Ile	Thr	Glu	Leu	Leu	Lys	Lys	Leu	Gln	
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Ser	Thr	Thr	Val	Met	Asn	Pro	Tyr	Met	Lys	Leu	Ala	Pro	Gly	Glu	
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ctt	act	atc	atc	ctc	taa	ttttttaaaaa	gaaatcttca	tttattcttc							13800
Leu	Thr	Ile	Ile	Leu											
4560															
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catacagtga	gccagccttg	cagtaggcag	tagactataa	gcagaagcac	atatgaactg										13920
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caaataaaatg	gagtctttat	tgtgtatcat													14070

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Met	Asp	Pro	Pro	Arg	Pro	Ala	Leu	Leu	Leu	Leu	Ala	Leu	Pro	Ala
1					5						10		15	

Leu	Leu	Leu	Leu	Leu	Leu	Ala	Gly	Ala	Arg	Ala	Glu	Glu	Met	Leu
20							25					30		

Glu	Asn	Val	Ser	Leu	Val	Cys	Pro	Lys	Asp	Ala	Thr	Arg	Phe	Lys	His
35							40					45			

Leu Arg Lys Tyr Thr Tyr Asn Tyr Glu Ala Glu Ser Ser Ser Gly Val
50 55 60

Pro Gly Thr Ala Asp Ser Arg Ser Ala Thr Arg Ile Asn Cys Lys Val
65 70 75 80

Glu Leu Glu Val Pro Gln Leu Cys Ser Phe Ile Leu Lys Thr Ser Gln
85 90 95

Cys Ile Leu Lys Glu Val Tyr Gly Phe Asn Pro Glu Gly Lys Ala Leu
100 105 110

Leu Lys Lys Thr Lys Asn Ser Glu Glu Phe Ala Ala Ala Met Ser Arg
115 120 125

Tyr Glu Leu Lys Leu Ala Ile Pro Glu Gly Lys Gln Val Phe Leu Tyr
130 135 140

Pro Glu Lys Asp Glu Pro Thr Tyr Ile Leu Asn Ile Lys Arg Gly Ile
145 150 155 160

Ile Ser Ala Leu Leu Val Pro Pro Glu Thr Glu Glu Ala Lys Gln Val
165 170 175

Leu Phe Leu Asp Thr Val Tyr Gly Asn Cys Ser Thr His Phe Thr Val
180 185 190

Lys Thr Arg Lys Gly Asn Val Ala Thr Glu Ile Ser Thr Glu Arg Asp
195 200 205

Leu Gly Gln Cys Asp Arg Phe Lys Pro Ile Arg Thr Gly Ile Ser Pro
210 215 220

Leu Ala Leu Ile Lys Gly Met Thr Arg Pro Leu Ser Thr Leu Ile Ser
225 230 235 240

Ser Ser Gln Ser Cys Gln Tyr Thr Leu Asp Ala Lys Arg Lys His Val
245 250 255

Ala Glu Ala Ile Cys Lys Glu Gln His Leu Phe Leu Pro Phe Ser Tyr
260 265 270

Lys Asn Lys Tyr Gly Met Val Ala Gln Val Thr Gln Thr Leu Lys Leu
275 280 285

Glu Asp Thr Pro Lys Ile Asn Ser Arg Phe Phe Gly Glu Gly Thr Lys
290 295 300

Lys Met Gly Leu Ala Phe Glu Ser Thr Lys Ser Thr Ser Pro Pro Lys
305 310 315 320

Gln Ala Glu Ala Val Leu Lys Thr Val Gln Glu Leu Lys Lys Leu Thr
325 330 335

Ile Ser Glu Gln Asn Ile Gln Arg Ala Asn Leu Phe Asn Lys Leu Val
340 345 350

Thr Glu Leu Arg Gly Leu Ser Asp Glu Ala Val Thr Ser Leu Leu Pro
355 360 365

Gln Leu Ile Glu Val Ser Ser Pro Ile Thr Leu Gln Ala Leu Val Gln
370 375 380

Cys Gly Gln Pro Gln Cys Ser Thr His Ile Leu Gln Trp Leu Lys Arg
385 390 395 400

Val His Ala Asn Pro Leu Leu Ile Asp Val Val Thr Tyr Leu Val Ala
405 410 415

Leu Ile Pro Glu Pro Ser Ala Gln Gln Leu Arg Glu Ile Phe Asn Met
420 425 430

Ala Arg Asp Gln Arg Ser Arg Ala Thr Leu Tyr Ala Leu Ser His Ala
435 440 445

Val Asn Asn Tyr His Lys Thr Asn Pro Thr Gly Thr Gln Glu Leu Leu
450 455 460

Asp Ile Ala Asn Tyr Leu Met Glu Gln Ile Gln Asp Asp Cys Thr Gly
465 470 475 480

Asp Glu Asp Tyr Thr Tyr Leu Ile Leu Arg Val Ile Gly Asn Met Gly
485 490 495

Gln Thr Met Glu Gln Leu Thr Pro Glu Leu Lys Ser Ser Ile Leu Lys
500 505 510

Cys Val Gln Ser Thr Lys Pro Ser Leu Met Ile Gln Lys Ala Ala Ile
515 520 525

Gln Ala Leu Arg Lys Met Glu Pro Lys Asp Lys Asp Gln Glu Val Leu
530 535 540

Leu Gln Thr Phe Leu Asp Asp Ala Ser Pro Gly Asp Lys Arg Leu Ala
545 550 555 560

Ala Tyr Leu Met Leu Met Arg Ser Pro Ser Gln Ala Asp Ile Asn Lys
565 570 575

Ile Val Gln Ile Leu Pro Trp Glu Gln Asn Glu Gln Val Lys Asn Phe
580 585 590

Val Ala Ser His Ile Ala Asn Ile Leu Asn Ser Glu Glu Leu Asp Ile
595 600 605

Gln Asp Leu Lys Lys Leu Val Lys Glu Val Leu Lys Glu Ser Gln Leu
610 615 620

Pro Thr Val Met Asp Phe Arg Lys Phe Ser Arg Asn Tyr Gln Leu Tyr
625 630 635 640

Lys Ser Val Ser Ile Pro Ser Leu Asp Pro Ala Ser Ala Lys Ile Glu
645 650 655

Gly Asn Leu Ile Phe Asp Pro Asn Asn Tyr Leu Pro Lys Glu Ser Met
660 665 670

Leu Lys Thr Thr Leu Thr Ala Phe Gly Phe Ala Ser Ala Asp Leu Ile
675 680 685

Glu Ile Gly Leu Glu Gly Lys Gly Phe Glu Pro Thr Leu Glu Ala Leu
690 695 700

Phe Gly Lys Gln Gly Phe Phe Pro Asp Ser Val Asn Lys Ala Leu Tyr
705 710 715 720

Trp Val Asn Gly Gln Val Pro Asp Gly Val Ser Lys Val Leu Val Asp
725 730 735

His Phe Gly Tyr Thr Lys Asp Asp Lys His Glu Gln Asp Met Val Asn
740 745 750

Gly Ile Met Leu Ser Val Glu Lys Leu Ile Lys Asp Leu Lys Ser Lys
755 760 765

Glu Val Pro Glu Ala Arg Ala Tyr Leu Arg Ile Leu Gly Glu Glu Leu
770 775 780

Gly Phe Ala Ser Leu His Asp Leu Gln Leu Leu Gly Lys Leu Leu Leu
785 790 795 800

Met Gly Ala Arg Thr Leu Gln Gly Ile Pro Gln Met Ile Gly Glu Val
805 810 815

Ile Arg Lys Gly Ser Lys Asn Asp Phe Phe Leu His Tyr Ile Phe Met
820 825 830

Glu Asn Ala Phe Glu Leu Pro Thr Gly Ala Gly Leu Gln Leu Gln Ile
835 840 845

Ser Ser Ser Gly Val Ile Ala Pro Gly Ala Lys Ala Gly Val Lys Leu
850 855 860

Glu Val Ala Asn Met Gln Ala Glu Leu Val Ala Lys Pro Ser Val Ser
865 870 875 880

Val Glu Phe Val Thr Asn Met Gly Ile Ile Ile Pro Asp Phe Ala Arg
885 890 895

Ser Gly Val Gln Met Asn Thr Asn Phe Phe His Glu Ser Gly Leu Glu
900 905 910

Ala His Val Ala Leu Lys Pro Gly Lys Leu Lys Phe Ile Ile Pro Ser
915 920 925

Pro Lys Arg Pro Val Lys Leu Leu Ser Gly Gly Asn Thr Leu His Leu
930 935 940

Val Ser Thr Thr Lys Thr Glu Val Ile Pro Pro Leu Ile Glu Asn Arg
945 950 955 960

Gln Ser Trp Ser Val Cys Lys Gln Val Phe Pro Gly Leu Asn Tyr Cys
965 970 975

Thr Ser Gly Ala Tyr Ser Asn Ala Ser Ser Thr Asp Ser Ala Ser Tyr
980 985 990

Tyr Pro Leu Thr Gly Asp Thr Arg Leu Glu Leu Glu Leu Arg Pro Thr
995 1000 1005

Gly Glu Ile Glu Gln Tyr Ser Val Ser Ala Thr Tyr Glu Leu Gln
1010 1015 1020

Arg Glu Asp Arg Ala Leu Val Asp Thr Leu Lys Phe Val Thr Gln
1025 1030 1035

Ala Glu Gly Ala Lys Gln Thr Glu Ala Thr Met Thr Phe Lys Tyr
1040 1045 1050

Asn Arg Gln Ser Met Thr Leu Ser Ser Glu Val Gln Ile Pro Asp
1055 1060 1065

Phe Asp Val Asp Leu Gly Thr Ile Leu Arg Val Asn Asp Glu Ser
1070 1075 1080

Thr Glu Gly Lys Thr Ser Tyr Arg Leu Thr Leu Asp Ile Gln Asn
1085 1090 1095

Lys Lys Ile Thr Glu Val Ala Leu Met Gly His Leu Ser Cys Asp
1100 1105 1110

Thr Lys Glu Glu Arg Lys Ile Lys Gly Val Ile Ser Ile Pro Arg
1115 1120 1125

Leu Gln Ala Glu Ala Arg Ser Glu Ile Leu Ala His Trp Ser Pro
1130 1135 1140

Ala Lys Leu Leu Leu Gln Met Asp Ser Ser Ala Thr Ala Tyr Gly
1145 1150 1155

Ser Thr Val Ser Lys Arg Val Ala Trp His Tyr Asp Glu Glu Lys
1160 1165 1170

Ile Glu Phe Glu Trp Asn Thr Gly Thr Asn Val Asp Thr Lys Lys
1175 1180 1185

Met Thr Ser Asn Phe Pro Val Asp Leu Ser Asp Tyr Pro Lys Ser
1190 1195 1200

Leu His Met Tyr Ala Asn Arg Leu Leu Asp His Arg Val Pro Gln
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Thr Asp Met Thr Phe Arg His Val Gly Ser Lys Leu Ile Val Ala
1220 1225 1230

Met Ser Ser Trp Leu Gln Lys Ala Ser Gly Ser Leu Pro Tyr Thr
1235 1240 1245

Gln Thr Leu Gln Asp His Leu Asn Ser Leu Lys Glu Phe Asn Leu
1250 1255 1260

Gln Asn Met Gly Leu Pro Asp Phe His Ile Pro Glu Asn Leu Phe
1265 1270 1275

Leu Lys Ser Asp Gly Arg Val Lys Tyr Thr Leu Asn Lys Asn Ser
1280 1285 1290

Leu Lys Ile Glu Ile Pro Leu Pro Phe Gly Gly Lys Ser Ser Arg
1295 1300 1305

Asp Leu Lys Met Leu Glu Thr Val Arg Thr Pro Ala Leu His Phe
1310 1315 1320

Lys Ser Val Gly Phe His Leu Pro Ser Arg Glu Phe Gln Val Pro
1325 1330 1335

Thr Phe Thr Ile Pro Lys Leu Tyr Gln Leu Gln Val Pro Leu Leu
1340 1345 1350

Gly Val Leu Asp Leu Ser Thr Asn Val Tyr Ser Asn Leu Tyr Asn
1355 1360 1365

Trp Ser Ala Ser Tyr Ser Gly Gly Asn Thr Ser Thr Asp His Phe
1370 1375 1380

Ser Leu Arg Ala Arg Tyr His Met Lys Ala Asp Ser Val Val Asp
1385 1390 1395

Leu Leu Ser Tyr Asn Val Gln Gly Ser Gly Glu Thr Thr Tyr Asp
1400 1405 1410

His Lys Asn Thr Phe Thr Leu Ser Cys Asp Gly Ser Leu Arg His
1415 1420 1425

Lys Phe Leu Asp Ser Asn Ile Lys Phe Ser His Val Glu Lys Leu
1430 1435 1440

Gly Asn Asn Pro Val Ser Lys Gly Leu Leu Ile Phe Asp Ala Ser
1445 1450 1455

Ser Ser Trp Gly Pro Gln Met Ser Ala Ser Val His Leu Asp Ser
1460 1465 1470

Lys Lys Lys Gln His Leu Phe Val Lys Glu Val Lys Ile Asp Gly
1475 1480 1485

Gln Phe Arg Val Ser Ser Phe Tyr Ala Lys Gly Thr Tyr Gly Leu
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Ser Cys Gln Arg Asp Pro Asn Thr Gly Arg Leu Asn Gly Glu Ser
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Asn Leu Arg Phe Asn Ser Ser Tyr Leu Gln Gly Thr Asn Gln Ile
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Thr Gly Arg Tyr Glu Asp Gly Thr Leu Ser Leu Thr Ser Thr Ser
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Asp Leu Gln Ser Gly Ile Ile Lys Asn Thr Ala Ser Leu Lys Tyr
1550 1555 1560

Glu Asn Tyr Glu Leu Thr Leu Lys Ser Asp Thr Asn Gly Lys Tyr
1565 1570 1575

Lys Asn Phe Ala Thr Ser Asn Lys Met Asp Met Thr Phe Ser Lys
1580 1585 1590

Gln Asn Ala Leu Leu Arg Ser Glu Tyr Gln Ala Asp Tyr Glu Ser
1595 1600 1605

Leu Arg Phe Phe Ser Leu Leu Ser Gly Ser Leu Asn Ser His Gly
1610 1615 1620

Leu Glu Leu Asn Ala Asp Ile Leu Gly Thr Asp Lys Ile Asn Ser
1625 1630 1635

Gly Ala His Lys Ala Thr Leu Arg Ile Gly Gln Asp Gly Ile Ser
1640 1645 1650

Thr Ser Ala Thr Thr Asn Leu Lys Cys Ser Leu Leu Val Leu Glu
1655 1660 1665

Asn Glu Leu Asn Ala Glu Leu Gly Leu Ser Gly Ala Ser Met Lys
1670 1675 1680

Leu Thr Thr Asn Gly Arg Phe Arg Glu His Asn Ala Lys Phe Ser
1685 1690 1695

Leu Asp Gly Lys Ala Ala Leu Thr Glu Leu Ser Leu Gly Ser Ala
1700 1705 1710

Tyr Gln Ala Met Ile Leu Gly Val Asp Ser Lys Asn Ile Phe Asn
1715 1720 1725

Phe Lys Val Ser Gln Glu Gly Leu Lys Leu Ser Asn Asp Met Met
1730 1735 1740

Gly Ser Tyr Ala Glu Met Lys Phe Asp His Thr Asn Ser Leu Asn
1745 1750 1755

Ile Ala Gly Leu Ser Leu Asp Phe Ser Ser Lys Leu Asp Asn Ile
1760 1765 1770

Tyr Ser Ser Asp Lys Phe Tyr Lys Gln Thr Val Asn Leu Gln Leu
1775 1780 1785

Gln Pro Tyr Ser Leu Val Thr Thr Leu Asn Ser Asp Leu Lys Tyr
1790 1795 1800

Asn Ala Leu Asp Leu Thr Asn Asn Gly Lys Leu Arg Leu Glu Pro
1805 1810 1815

Leu Lys Leu His Val Ala Gly Asn Leu Lys Gly Ala Tyr Gln Asn
1820 1825 1830

Asn Glu Ile Lys His Ile Tyr Ala Ile Ser Ser Ala Ala Leu Ser
1835 1840 1845

Ala Ser Tyr Lys Ala Asp Thr Val Ala Lys Val Gln Gly Val Glu
1850 1855 1860

Phe Ser His Arg Leu Asn Thr Asp Ile Ala Gly Leu Ala Ser Ala
1865 1870 1875

Ile Asp Met Ser Thr Asn Tyr Asn Ser Asp Ser Leu His Phe Ser
1880 1885 1890

Asn Val Phe Arg Ser Val Met Ala Pro Phe Thr Met Thr Ile Asp
1895 1900 1905

P E P T I D E S A N D C O M P O U N D S

Ala His Thr Asn Gly Asn Gly Lys Leu Ala Leu Trp Gly Glu His
1910 1915 1920

Thr Gly Gln Leu Tyr Ser Lys Phe Leu Leu Lys Ala Glu Pro Leu
1925 1930 1935

Ala Phe Thr Phe Ser His Asp Tyr Lys Gly Ser Thr Ser His His
1940 1945 1950

Leu Val Ser Arg Lys Ser Ile Ser Ala Ala Leu Glu His Lys Val
1955 1960 1965

Ser Ala Leu Leu Thr Pro Ala Glu Gln Thr Gly Thr Trp Lys Leu
1970 1975 1980

Lys Thr Gin Phe Asn Asn Asn Glu Tyr Ser Gln Asp Leu Asp Ala
1985 1990 1995

Tyr Asn Thr Lys Asp Lys Ile Gly Val Glu Leu Thr Gly Arg Thr
2000 2005 2010

Leu Ala Asp Leu Thr Leu Leu Asp Ser Pro Ile Lys Val Pro Leu
2015 2020 2025

Leu Leu Ser Glu Pro Ile Asn Ile Ile Asp Ala Leu Glu Met Arg
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Asp Ala Val Glu Lys Pro Gln Glu Phe Thr Ile Val Ala Phe Val
2045 2050 2055

Lys Tyr Asp Lys Asn Gln Asp Val His Ser Ile Asn Leu Pro Phe
2060 2065 2070

Phe Glu Thr Leu Gln Glu Tyr Phe Glu Arg Asn Arg Gln Thr Ile
2075 2080 2085

Ile Val Val Leu Glu Asn Val Gln Arg Asn Leu Lys His Ile Asn
2090 2095 2100

Ile Asp Gln Phe Val Arg Lys Tyr Arg Ala Ala Leu Gly Lys Leu
2105 2110 2115

Pro Gln Gln Ala Asn Asp Tyr Leu Asn Ser Phe Asn Trp Glu Arg
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Gln Val Ser His Ala Lys Glu Lys Leu Thr Ala Leu Thr Lys Lys
2135 2140 2145

Tyr Arg Ile Thr Glu Asn Asp Ile Gln Ile Ala Leu Asp Asp Ala
2150 2155 2160

Lys Ile Asn Phe Asn Glu Lys Leu Ser Gln Leu Gln Thr Tyr Met
2165 2170 2175

Ile Gln Phe Asp Gln Tyr Ile Lys Asp Ser Tyr Asp Leu His Asp
2180 2185 2190

Leu Lys Ile Ala Ile Ala Asn Ile Ile Asp Glu Ile Ile Glu Lys
2195 2200 2205

Leu Lys Ser Leu Asp Glu His Tyr His Ile Arg Val Asn Leu Val
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Lys Thr Ile His Asp Leu His Leu Phe Ile Glu Asn Ile Asp Phe
2225 2230 2235

Asn Lys Ser Gly Ser Ser Thr Ala Ser Trp Ile Gln Asn Val Asp
2240 2245 2250

Thr Lys Tyr Gln Ile Arg Ile Gln Ile Gln Glu Lys Leu Gln Gln
2255 2260 2265

Leu Lys Arg His Ile Gln Asn Ile Asp Ile Gln His Leu Ala Gly
2270 2275 2280

Lys Leu Lys Gln His Ile Glu Ala Ile Asp Val Arg Val Leu Leu
2285 2290 2295

Asp Gln Leu Gly Thr Thr Ile Ser Phe Glu Arg Ile Asn Asp Val
2300 2305 2310

Leu Glu His Val Lys His Phe Val Ile Asn Leu Ile Gly Asp Phe
2315 2320 2325

Glu Val Ala Glu Lys Ile Asn Ala Phe Arg Ala Lys Val His Glu
2330 2335 2340

Leu Ile Glu Arg Tyr Glu Val Asp Gln Gln Ile Gln Val Leu Met
2345 2350 2355

Asp Lys Leu Val Glu Leu Ala His Gln Tyr Lys Leu Lys Glu Thr
2360 2365 2370

Ile Gln Lys Leu Ser Asn Val Leu Gln Gln Val Lys Ile Lys Asp
2375 2380 2385

Tyr Phe Glu Lys Leu Val Gly Phe Ile Asp Asp Ala Val Lys Lys
2390 2395 2400

Leu Asn Glu Leu Ser Phe Lys Thr Phe Ile Glu Asp Val Asn Lys
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Phe Leu Asp Met Leu Ile Lys Lys Leu Lys Ser Phe Asp Tyr His
2420 2425 2430

Gln Phe Val Asp Glu Thr Asn Asp Lys Ile Arg Glu Val Thr Gln
2435 2440 2445

Arg Leu Asn Gly Glu Ile Gln Ala Leu Glu Leu Pro Gln Lys Ala
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Glu Ala Leu Lys Leu Phe Leu Glu Glu Thr Lys Ala Thr Val Ala
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Val Tyr Leu Glu Ser Leu Gln Asp Thr Lys Ile Thr Leu Ile Ile
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Asn Trp Leu Gln Glu Ala Leu Ser Ser Ala Ser Leu Ala His Met
2495 2500 2505

Lys Ala Lys Phe Arg Glu Thr Leu Glu Asp Thr Arg Asp Arg Met
2510 2515 2520

Tyr Gln Met Asp Ile Gln Gln Glu Leu Gln Arg Tyr Leu Ser Leu
2525 2530 2535

Val Gly Gln Val Tyr Ser Thr Leu Val Thr Tyr Ile Ser Asp Trp
2540 2545 2550

Trp Thr Leu Ala Ala Lys Asn Leu Thr Asp Phe Ala Glu Gln Tyr
2555 2560 2565

Ser Ile Gln Asp Trp Ala Lys Arg Met Lys Ala Leu Val Glu Gln
2570 2575 2580

Gly Phe Thr Val Pro Glu Ile Lys Thr Ile Leu Gly Thr Met Pro
2585 2590 2595

Ala Phe Glu Val Ser Leu Gln Ala Leu Gln Lys Ala Thr Phe Gln
2600 2605 2610

Thr Pro Asp Phe Ile Val Pro Leu Thr Asp Leu Arg Ile Pro Ser
2615 2620 2625

Val Gln Ile Asn Phe Lys Asp Leu Lys Asn Ile Lys Ile Pro Ser
2630 2635 2640

Arg Phe Ser Thr Pro Glu Phe Thr Ile Leu Asn Thr Phe His Ile
2645 2650 2655

Pro Ser Phe Thr Ile Asp Phe Val Glu Met Lys Val Lys Ile Ile
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Arg Thr Ile Asp Gln Met Leu Asn Ser Glu Leu Gln Trp Pro Val
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Pro Asp Ile Tyr Leu Arg Asp Leu Lys Val Glu Asp Ile Pro Leu
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Pro Glu Phe Ile Ile Pro Thr Leu Asn Leu Asn Asp Phe Gln Val
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Pro Asp Leu His Ile Pro Glu Phe Gln Leu Pro His Ile Ser His
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Thr Ile Glu Val Pro Thr Phe Gly Lys Leu Tyr Ser Ile Leu Lys
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Ile Gln Ser Pro Leu Phe Thr Leu Asp Ala Asn Ala Asp Ile Gly
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Asn Gly Thr Thr Ser Ala Asn Glu Ala Gly Ile Ala Ala Ser Ile
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Thr Ala Lys Gly Glu Ser Lys Leu Glu Val Leu Asn Phe Asp Phe
2795 2800 2805

Gln Ala Asn Ala Gln Leu Ser Asn Pro Lys Ile Asn Pro Leu Ala
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Leu Lys Glu Ser Val Lys Phe Ser Ser Lys Tyr Leu Arg Thr Glu
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His Gly Ser Glu Met Leu Phe Phe Gly Asn Ala Ile Glu Gly Lys
2840 2845 2850

Ser Asn Thr Val Ala Ser Leu His Thr Glu Lys Asn Thr Leu Glu
2855 2860 2865

Leu Ser Asn Gly Val Ile Val Lys Ile Asn Asn Gln Leu Thr Leu
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Asp Ser Asn Thr Lys Tyr Phe His Lys Leu Asn Ile Pro Lys Leu
2885 2890 2895

Asp Phe Ser Ser Gln Ala Asp Leu Arg Asn Glu Ile Lys Thr Leu
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Leu Lys Ala Gly His Ile Ala Trp Thr Ser Ser Gly Lys Gly Ser
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Trp Lys Trp Ala Cys Pro Arg Phe Ser Asp Glu Gly Thr His Glu
2930 2935 2940

Ser Gln Ile Ser Phe Thr Ile Glu Gly Pro Leu Thr Ser Phe Gly
2945 2950 2955

Leu Ser Asn Lys Ile Asn Ser Lys His Leu Arg Val Asn Gln Asn
2960 2965 2970

Leu Val Tyr Glu Ser Gly Ser Leu Asn Phe Ser Lys Leu Glu Ile
2975 2980 2985

Gln Ser Gln Val Asp Ser Gln His Val Gly His Ser Val Leu Thr
2990 2995 3000

Ala Lys Gly Met Ala Leu Phe Gly Glu Gly Lys Ala Glu Phe Thr
3005 3010 3015

Gly Arg His Asp Ala His Leu Asn Gly Lys Val Ile Gly Thr Leu
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Lys Asn Ser Leu Phe Phe Ser Ala Gln Pro Phe Glu Ile Thr Ala
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Ser Thr Asn Asn Glu Gly Asn Leu Lys Val Arg Phe Pro Leu Arg
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Leu Thr Gly Lys Ile Asp Phe Leu Asn Asn Tyr Ala Leu Phe Leu
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Ser Pro Ser Ala Gln Gln Ala Ser Trp Gln Val Ser Ala Arg Phe
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Asn Gln Tyr Lys Tyr Asn Gln Asn Phe Ser Ala Gly Asn Asn Glu
3095 3100 3105

Asn Ile Met Glu Ala His Val Gly Ile Asn Gly Glu Ala Asn Leu
3110 3115 3120

Asp Phe Leu Asn Ile Pro Leu Thr Ile Pro Glu Met Arg Leu Pro
3125 3130 3135

Tyr Thr Ile Ile Thr Thr Pro Pro Leu Lys Asp Phe Ser Leu Trp
3140 3145 3150

Glu Lys Thr Gly Leu Lys Glu Phe Leu Lys Thr Thr Lys Gln Ser
3155 3160 3165

Phe Asp Leu Ser Val Lys Ala Gln Tyr Lys Lys Asn Lys His Arg
3170 3175 3180

His Ser Ile Thr Asn Pro Leu Ala Val Leu Cys Glu Phe Ile Ser
3185 3190 3195

Gln Ser Ile Lys Ser Phe Asp Arg His Phe Glu Lys Asn Arg Asn
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Asn Ala Leu Asp Phe Val Thr Lys Ser Tyr Asn Glu Thr Lys Ile
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Lys Phe Asp Lys Tyr Lys Ala Glu Lys Ser His Asp Glu Leu Pro
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Arg Thr Phe Gln Ile Pro Gly Tyr Thr Val Pro Val Val Asn Val
3245 3250 3255

Glu Val Ser Pro Phe Thr Ile Glu Met Ser Ala Phe Gly Tyr Val
3260 3265 3270

Phe Pro Lys Ala Val Ser Met Pro Ser Phe Ser Ile Leu Gly Ser
3275 3280 3285

Asp Val Arg Val Pro Ser Tyr Thr Leu Ile Leu Pro Ser Leu Glu
3290 3295 3300

Leu Pro Val Leu His Val Pro Arg Asn Leu Lys Leu Ser Leu Pro
3305 3310 3315

Asp Phe Lys Glu Leu Cys Thr Ile Ser His Ile Phe Ile Pro Ala
3320 3325 3330

Met Gly Asn Ile Thr Tyr Asp Phe Ser Phe Lys Ser Ser Val Ile
3335 3340 3345

Thr Leu Asn Thr Asn Ala Glu Leu Phe Asn Gln Ser Asp Ile Val
3350 3355 3360

Ala His Leu Leu Ser Ser Ser Ser Val Ile Asp Ala Leu Gln
3365 3370 3375

Tyr Lys Leu Glu Gly Thr Thr Arg Leu Thr Arg Lys Arg Gly Leu
3380 3385 3390

Lys Leu Ala Thr Ala Leu Ser Leu Ser Asn Lys Phe Val Glu Gly
3395 3400 3405

Ser His Asn Ser Thr Val Ser Leu Thr Thr Lys Asn Met Glu Val
3410 3415 3420

Ser Val Ala Thr Thr Thr Lys Ala Gln Ile Pro Ile Leu Arg Met
3425 3430 3435

Asn Phe Lys Gln Glu Leu Asn Gly Asn Thr Lys Ser Lys Pro Thr
3440 3445 3450

Val Ser Ser Ser Met Glu Phe Lys Tyr Asp Phe Asn Ser Ser Met
3455 3460 3465

Leu Tyr Ser Thr Ala Lys Gly Ala Val Asp His Lys Leu Ser Leu
3470 3475 3480

Glu Ser Leu Thr Ser Tyr Phe Ser Ile Glu Ser Ser Thr Lys Gly
3485 3490 3495

Asp Val Lys Gly Ser Val Leu Ser Arg Glu Tyr Ser Gly Thr Ile
3500 3505 3510

Ala Ser Glu Ala Asn Thr Tyr Leu Asn Ser Lys Ser Thr Arg Ser
3515 3520 3525

Ser Val Lys Leu Gln Gly Thr Ser Lys Ile Asp Asp Ile Trp Asn
3530 3535 3540

Leu Glu Val Lys Glu Asn Phe Ala Gly Glu Ala Thr Leu Gln Arg
3545 3550 3555

Ile Tyr Ser Leu Trp Glu His Ser Thr Lys Asn His Leu Gln Leu
3560 3565 3570

Glu Gly Leu Phe Phe Thr Asn Gly Glu His Thr Ser Lys Ala Thr
3575 3580 3585

Leu Glu Leu Ser Pro Trp Gln Met Ser Ala Leu Val Gln Val His
3590 3595 3600

Ala Ser Gln Pro Ser Ser Phe His Asp Phe Pro Asp Leu Gly Gln
3605 3610 3615

Glu Val Ala Leu Asn Ala Asn Thr Lys Asn Gln Lys Ile Arg Trp
3620 3625 3630

Lys Asn Glu Val Arg Ile His Ser Gly Ser Phe Gln Ser Gln Val
3635 3640 3645

Glu Leu Ser Asn Asp Gln Glu Lys Ala His Leu Asp Ile Ala Gly
3650 3655 3660

Ser Leu Glu Gly His Leu Arg Phe Leu Lys Asn Ile Ile Leu Pro
3665 3670 3675

Val Tyr Asp Lys Ser Leu Trp Asp Phe Leu Lys Leu Asp Val Thr
3680 3685 3690

Thr Ser Ile Gly Arg Arg Gln His Leu Arg Val Ser Thr Ala Phe
3695 3700 3705

Val Tyr Thr Lys Asn Pro Asn Gly Tyr Ser Phe Ser Ile Pro Val
3710 3715 3720

Lys Val Leu Ala Asp Lys Phe Ile Ile Pro Gly Leu Lys Leu Asn
3725 3730 3735

Asp Leu Asn Ser Val Leu Val Met Pro Thr Phe His Val Pro Phe
3740 3745 3750

Thr Asp Leu Gln Val Pro Ser Cys Lys Leu Asp Phe Arg Glu Ile
3755 3760 3765

Gln Ile Tyr Lys Lys Leu Arg Thr Ser Ser Phe Ala Leu Asn Leu
3770 3775 3780

Pro Thr Leu Pro Glu Val Lys Phe Pro Glu Val Asp Val Leu Thr
3785 3790 3795

Lys Tyr Ser Gln Pro Glu Asp Ser Leu Ile Pro Phe Phe Glu Ile
3800 3805 3810

Thr Val Pro Glu Ser Gln Leu Thr Val Ser Gln Phe Thr Leu Pro
3815 3820 3825

Lys Ser Val Ser Asp Gly Ile Ala Ala Leu Asp Leu Asn Ala Val
3830 3835 3840

Ala Asn Lys Ile Ala Asp Phe Glu Leu Pro Thr Ile Ile Val Pro
3845 3850 3855

Glu Gln Thr Ile Glu Ile Pro Ser Ile Lys Phe Ser Val Pro Ala
3860 3865 3870

Gly Ile Ala Ile Pro Ser Phe Gln Ala Leu Thr Ala Arg Phe Glu
3875 3880 3885

Val Asp Ser Pro Val Tyr Asn Ala Thr Trp Ser Ala Ser Leu Lys
3890 3895 3900

Asn Lys Ala Asp Tyr Val Glu Thr Val Leu Asp Ser Thr Cys Ser
3905 3910 3915

Ser Thr Val Gln Phe Leu Glu Tyr Glu Leu Asn Val Leu Gly Thr
3920 3925 3930

His Lys Ile Glu Asp Gly Thr Leu Ala Ser Lys Thr Lys Gly Thr
3935 3940 3945

Phe Ala His Arg Asp Phe Ser Ala Glu Tyr Glu Glu Asp Gly Lys
3950 3955 3960

Tyr Glu Gly Leu Gln Glu Trp Glu Gly Lys Ala His Leu Asn Ile
3965 3970 3975

Lys Ser Pro Ala Phe Thr Asp Leu His Leu Arg Tyr Gln Lys Asp
3980 3985 3990

Lys Lys Gly Ile Ser Thr Ser Ala Ala Ser Pro Ala Val Gly Thr
3995 4000 4005

Val Gly Met Asp Met Asp Glu Asp Asp Asp Phe Ser Lys Trp Asn
4010 4015 4020

Phe Tyr Tyr Ser Pro Gln Ser Ser Pro Asp Lys Lys Leu Thr Ile
4025 4030 4035

Phe Lys Thr Glu Leu Arg Val Arg Glu Ser Asp Glu Glu Thr Gln
4040 4045 4050

Ile Lys Val Asn Trp Glu Glu Glu Ala Ala Ser Gly Leu Leu Thr
4055 4060 4065

Ser Leu Lys Asp Asn Val Pro Lys Ala Thr Gly Val Leu Tyr Asp
4070 4075 4080

Tyr Val Asn Lys Tyr His Trp Glu His Thr Gly Leu Thr Leu Arg
4085 4090 4095

Glu Val Ser Ser Lys Leu Arg Arg Asn Leu Gln Asp His Ala Glu
4100 4105 4110

Trp Val Tyr Gln Gly Ala Ile Arg Glu Ile Asp Asp Ile Asp Glu
4115 4120 4125

Arg Phe Gln Lys Gly Ala Ser Gly Thr Thr Gly Thr Tyr Gln Glu
4130 4135 4140

Trp Lys Asp Lys Ala Gln Asn Leu Tyr Gln Glu Leu Leu Thr Gln
4145 4150 4155

Glu Gly Gln Ala Ser Phe Gln Gly Leu Lys Asp Asn Val Phe Asp
4160 4165 4170

Gly Leu Val Arg Val Thr Gln Glu Phe His Met Lys Val Lys His
4175 4180 4185

Leu Ile Asp Ser Leu Ile Asp Phe Leu Asn Phe Pro Arg Phe Gln
4190 4195 4200

Phe Pro Gly Lys Pro Gly Ile Tyr Thr Arg Glu Glu Leu Cys Thr
4205 4210 4215

Met Phe Ile Arg Glu Val Gly Thr Val Leu Ser Gln Val Tyr Ser
4220 4225 4230

Lys Val His Asn Gly Ser Glu Ile Leu Phe Ser Tyr Phe Gln Asp
4235 4240 4245

Leu Val Ile Thr Leu Pro Phe Glu Leu Arg Lys His Lys Leu Ile
4250 4255 4260

Asp Val Ile Ser Met Tyr Arg Glu Leu Leu Lys Asp Leu Ser Lys
4265 4270 4275

Glu Ala Gln Glu Val Phe Lys Ala Ile Gln Ser Leu Lys Thr Thr
4280 4285 4290

Glu Val Leu Arg Asn Leu Gln Asp Leu Leu Gln Phe Ile Phe Gln
4295 4300 4305

Leu Ile Glu Asp Asn Ile Lys Gln Leu Lys Glu Met Lys Phe Thr
4310 4315 4320

Tyr Leu Ile Asn Tyr Ile Gln Asp Glu Ile Asn Thr Ile Phe Asn
4325 4330 4335

Asp Tyr Ile Pro Tyr Val Phe Lys Leu Leu Lys Glu Asn Leu Cys
4340 4345 4350

Leu Asn Leu His Lys Phe Asn Glu Phe Ile Gln Asn Glu Leu Gln
4355 4360 4365

Glu Ala Ser Gln Glu Leu Gln Gln Ile His Gln Tyr Ile Met Ala
4370 4375 4380

Leu Arg Glu Glu Tyr Phe Asp Pro Ser Ile Val Gly Trp Thr Val
4385 4390 4395

Lys Tyr Tyr Glu Leu Glu Lys Ile Val Ser Leu Ile Lys Asn
4400 4405 4410

Leu Leu Val Ala Leu Lys Asp Phe His Ser Glu Tyr Ile Val Ser
4415 4420 4425

Ala Ser Asn Phe Thr Ser Gln Leu Ser Ser Gln Val Glu Gln Phe
4430 4435 4440

Leu His Arg Asn Ile Gln Glu Tyr Leu Ser Ile Leu Thr Asp Pro
4445 4450 4455

Asp Gly Lys Gly Lys Glu Lys Ile Ala Glu Leu Ser Ala Thr Ala
4460 4465 4470

Gln Glu Ile Ile Lys Ser Gln Ala Ile Ala Thr Lys Lys Ile Ile
4475 4480 4485

Ser Asp Tyr His Gln Gln Phe Arg Tyr Lys Leu Gln Asp Phe Ser
4490 4495 4500

Asp Gln Leu Ser Asp Tyr Tyr Glu Lys Phe Ile Ala Glu Ser Lys
4505 4510 4515

Arg Leu Ile Asp Leu Ser Ile Gln Asn Tyr His Thr Phe Leu Ile
4520 4525 4530

Tyr Ile Thr Glu Leu Leu Lys Lys Leu Gln Ser Thr Thr Val Met
4535 4540 4545

Asn Pro Tyr Met Lys Leu Ala Pro Gly Glu Leu Thr Ile Ile Leu
4550 4555 4560

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atg aag gtt ctg tgg gct gcg ttg ctg gtc aca ttc ctg gca gga tgc 108
Met Lys Val Leu Trp Ala Ala Leu Leu Val Thr Phe Leu Ala Gly Cys
5 10 15

cag gcc aag gtg gag caa gcg gtg gag aca gag ccg gag ccc gag ctg 156
Gln Ala Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu

1922-1923 - 1923-1924

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20	25	30	
cgc cag cag acc gag tgg cag agc ggc cag cgc tgg gaa ctg gca ctg Arg Gln Gln Thr Glu Trp Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu			204
35	40	45	
ggt cgc ttt tgg gat tac ctg cgc tgg gtg cag aca ctg tct gag cag Gly Arg Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln			252
50	55	60	
gtg cag gag gag ctg ctc agc tcc cag gtc acc cag gaa ctg agg gcg Val Gln Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala			300
65	70	75	80
ctg atg gac gag acc atg aag gag ttg aag gcc tac aaa tcg gaa ctg Leu Met Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu			348
85	90	95	
gag gaa caa ctg acc ccg gtg gcg gag gag acg cgg gca cgg ctg tcc Glu Glu Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser			396
100	105	110	
aag gag ctg cag gcg ccg cag gcc cgg ctg ggc gcg gac atg gag gac Lys Glu Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp			444
115	120	125	
gtg tgc ggc cgc ctg gtg cag tac cgc ggc gag gtg cag gcc atg ctc Val Cys Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu			492
130	135	140	
ggc cag agc acc gag gag ctg cgg gtg cgc ctc gcc tcc cac ctg cgc Gly Gln Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg			540
145	150	155	160
aag ctg cgt aag cgg ctc ctc cgc gat gcc gat gac ctg cag aag cgc Lys Leu Arg Lys Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Arg			588
165	170	175	
ctg gca gtg tac cag gcc ggg gcc cgc gag ggc gca gag cgc ggc ctc Leu Ala Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu			636
180	185	190	
agc gcc atc cgc gag cgc ctg ggg ccc ctg gtg gaa cag ggc cgc gtg Ser Ala Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val			684
195	200	205	
cgg gcc gcc act gtg ggc tcc ctg gcc ggc cag ccg cta cag gag cgg Arg Ala Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg			732
210	215	220	
gcc cag gcc tgg ggc gag cgg ctg cgc gcg cgg atg gag gag atg ggc Ala Gln Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly			780
225	230	235	240
agc cgg acc cgc gac cgc ctg gac gag gtg aag gag cag gtg gcg gag Ser Arg Thr Arg Asp Arg Leu Asp Glu Val Lys Glu Gln Val Ala Glu			828
245	250	255	
gtg cgc gcc aag ctg gag gag cag gcc cag cag ata cgc ctg cag gcc Val Arg Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala			876

260	265	270	
gag gcc ttc cag gcc cgc ctc aag agc tgg ttc gag ccc ctg gtg gaa Glu Ala Phe Gln Ala Arg Leu Lys Ser Trp Phe Glu Pro Leu Val Glu 275	280	285	924
gac atg cag cgc cag tgg gcc ggg ctg gtg gag aag gtg cag gct gcc Asp Met Gln Arg Gln Trp Ala Gly Leu Val Glu Lys Val Gln Ala Ala 290	295	300	972
gtg ggc acc agc gcc gcc cct gtg ccc agc gac aat cac tga Val Gly Thr Ser Ala Ala Pro Val Pro Ser Asp Asn His 305	310	315	1014
acgccgaagc ctgcagccat gcgcacccac gccaccccggt gcctcctgcc tccgcgcagc ctgcagcggg agaccctgtc cccgcggcag ccgtcctcct ggggtggacc ctagtttaat aaagattcac caagtttacac gc			1074 1134 1156
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Met Lys Val Leu Trp Ala Ala Leu Leu Val Thr Phe Leu Ala Gly Cys 1	5	10	15
Gln Ala Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu 20	25	30	
Arg Gln Gln Thr Glu Trp Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu 35	40	45	
Gly Arg Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln 50	55	60	
Val Gln Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala 65	70	75	80
Leu Met Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu 85	90	95	
Glu Glu Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser 100	105	110	
Lys Glu Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp 115	120	125	
Val Cys Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu 130	135	140	
Gly Gln Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg			

DRAFT VERSION 2 OF THE HUMAN GENOME

145	150	155	160
Lys Leu Arg Lys Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Arg			
165	170	175	
Leu Ala Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu			
180	185	190	
Ser Ala Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val			
195	200	205	
Arg Ala Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg			
210	215	220	
Ala Gln Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly			
225	230	235	240
Ser Arg Thr Arg Asp Arg Leu Asp Glu Val Lys Glu Gln Val Ala Glu			
245	250	255	
Val Arg Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala			
260	265	270	
Glu Ala Phe Gln Ala Arg Leu Lys Ser Trp Phe Glu Pro Leu Val Glu			
275	280	285	
Asp Met Gln Arg Gln Trp Ala Gly Leu Val Glu Lys Val Gln Ala Ala			
290	295	300	
Val Gly Thr Ser Ala Ala Pro Val Pro Ser Asp Asn His			
305	310	315	
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<222> (3)..(542) <223>			
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Leu Gly Asp Val Ala Gly Arg Gly Asn Glu Lys Lys Pro Ser Ser			
1	5	10	15
gtg agg gct ctg tcc att gtc ctc ccc atc gcc acg gag ctg ggt ctc			95
Val Arg Ala Leu Ser Ile Val Leu Pro Ile Ala Thr Glu Leu Gly Leu			
20	25	30	
tgg tct cgg ggg cag ctg tgt gac aga gcg tgc ctc tcc cta cgg tgc			143
Trp Ser Arg Gly Gln Leu Cys Asp Arg Ala Cys Leu Ser Leu Arg Cys			
35	40	45	
tcc tcg tct tcc ttt gcc tgg ggg tct tcc ttc tat gga aga act ggc			191

Ser Ser Ser Ser Phe Ala Trp Gly Ser Ser Phe Tyr Gly Arg Thr Gly			
50	55	60	
gac tta aga aca tca aca gca tca act ttg aca acc ccg tct atc aga			239
Gly Leu Arg Thr Ser Thr Ala Ser Thr Leu Thr Thr Pro Ser Ile Arg			
65	70	75	
aga cca cag agg atg agg tcc aca ttt gcc aca acc agg acg gct aca			287
Arg Pro Gln Arg Met Arg Ser Thr Phe Ala Thr Thr Arg Thr Ala Thr			
80	85	90	95
gct acc cct cga gac aga tgg tca gtc tgg agg atg acg tgg cgt gaa			335
Ala Thr Pro Arg Asp Arg Trp Ser Val Trp Arg Met Thr Trp Arg Glu			
100	105	110	
cat ctg cct gga gtc ccg ccc ctg ccc aga acc ctt cct gag acc tcg			383
His Leu Pro Gly Val Pro Pro Leu Pro Arg Thr Leu Pro Glu Thr Ser			
115	120	125	
ccg gcc ttg ttt tat tca aag aca gag aag acc aaa gca ttg cct gcc			431
Pro Ala Leu Phe Tyr Ser Lys Thr Glu Lys Thr Lys Ala Leu Pro Ala			
130	135	140	
aga gct ttg ttt tat ata ttt att cat ctg gga ggc aga aca ggc ttc			479
Arg Ala Leu Phe Tyr Ile Phe His Leu Gly Gly Arg Thr Gly Phe			
145	150	155	
gga cag tgc cca tgc aat ggc ttg ggt tgg gat ttt ggt ttc ttc ctt			527
Gly Gln Cys Pro Cys Asn Gly Leu Gly Trp Asp Phe Gly Phe Phe Leu			
160	165	170	175
tcc tgt gaa gga taa			542
Ser Cys Glu Gly			

<210> 132 <211> 179 <212> PRT <213> Homo sapiens <400> 132			
Leu Gly Asp Val Ala Gly Arg Gly Asn Glu Lys Lys Pro Ser Ser Val			
1	5	10	15
Arg Ala Leu Ser Ile Val Leu Pro Ile Ala Thr Glu Leu Gly Leu Trp			
20	25	30	
Ser Arg Gly Gln Leu Cys Asp Arg Ala Cys Leu Ser Leu Arg Cys Ser			
35	40	45	
Ser Ser Ser Phe Ala Trp Gly Ser Ser Phe Tyr Gly Arg Thr Gly Gly			
50	55	60	
Leu Arg Thr Ser Thr Ala Ser Thr Leu Thr Thr Pro Ser Ile Arg Arg			
65	70	75	80
Pro Gln Arg Met Arg Ser Thr Phe Ala Thr Thr Arg Thr Ala Thr Ala			
85	90	95	

Thr Pro Arg Asp Arg Trp Ser Val Trp Arg Met Thr Trp Arg Glu His
100 105 110

Leu Pro Gly Val Pro Pro Leu Pro Arg Thr Leu Pro Glu Thr Ser Pro
115 120 125

Ala Leu Phe Tyr Ser Lys Thr Glu Lys Thr Lys Ala Leu Pro Ala Arg
130 135 140

Ala Leu Phe Tyr Ile Phe Ile His Leu Gly Gly Arg Thr Gly Phe Gly
145 150 155 160

Gln Cys Pro Cys Asn Gly Leu Gly Trp Asp Phe Gly Phe Phe Leu Ser
165 170 175

Cys Glu Gly

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Met Gly Leu Gly Leu Leu Leu Pro Leu
1 5

ctg ctg ctc tgg act cgg ggg act cag ggg tcc gag ctg gac ccc aaa 101
Leu Leu Leu Trp Thr Arg Gly Thr Gln Gly Ser Glu Leu Asp Pro Lys
10 15 20 25

ggg cag cac gtc tgt gtg gcc agc agc ccc tct gct gag ctg cag tgc 149
Gly Gln His Val Cys Val Ala Ser Ser Pro Ser Ala Glu Leu Gln Cys
30 35 40

tgc gca ggc tgg agg cag aag gat caa gaa tgc acc atc ccc atc tgt 197
Cys Ala Gly Trp Arg Gln Lys Asp Gln Glu Cys Thr Ile Pro Ile Cys
45 50 55

gag ggg ccg gac gcc tgc cag aaa qac gag gtg tgt gtg aag ccg ggc 245
Glu Gly Pro Asp Ala Cys Gln Lys Asp Glu Val Cys Val Lys Pro Gly
60 65 70

ctc tgt cga tgc aag cct gga ttc ttt ggg gcc cac tgc agc tcc cgc 293
Leu Cys Arg Cys Lys Pro Gly Phe Gly Ala His Cys Ser Ser Arg
75 80 85

tgc ccg ggc cag tac tgg ggc ccc gac tgc cgt gag agc tgc ccc tgc 341
Cys Pro Gly Gln Tyr Trp Gly Pro Asp Cys Arg Glu Ser Cys Pro Cys
90 95 100 105

cac ccg cac ggc cag tgc gag cca gcc acg ggc gcg tgc cag tgc cag 389
His Pro His Gly Gln Cys Glu Pro Ala Thr Gly Ala Cys Gln Cys Gln

110	115	120	
gcc gac cgc tgg gga gcc cgc tgc gag ttc ccg tgc gcc tgc ggc ccc Ala Asp Arg Trp Gly Ala Arg Cys Glu Phe Pro Cys Ala Cys Gly Pro 125	130	135	437
cac ggg cgc tgc gac ccc gcg acc ggc gtg tgc cac tgc gaa ccc ggc His Gly Arg Cys Asp Pro Ala Thr Gly Val Cys His Cys Glu Pro Gly 140	145	150	485
tgg tgg tcg tcc acg tgc cgc cgc ccg tgc cag tgc aac acc gcg gcg Trp Trp Ser Ser Thr Cys Arg Arg Pro Cys Gln Cys Asn Thr Ala Ala 155	160	165	533
gcg cgc tgc gag cag gcc acg ggc gcc tgc gtg tgc aag ccg ggc tgg Ala Arg Cys Glu Gln Ala Thr Gly Ala Cys Val Cys Lys Pro Gly Trp 170	175	180	581
tgg ggg cgc cgc tgc agc ttc cgc tgc aac tgc cac ggc tcc ccg tgc Trp Gly Arg Arg Cys Ser Phe Arg Cys Asn Cys His Gly Ser Pro Cys 190	195	200	629
gag cag gac tcc ggc cgc tgc gcc tgc cgg ccg ggc tgg tgg ggt ccc Glu Gln Asp Ser Gly Arg Cys Ala Cys Arg Pro Gly Trp Trp Gly Pro 205	210	215	677
gaa tgc cag cag cag tgc gag tgt gtg cgg ggc cgc tgc agc gcc gcc Glu Cys Gln Gln Cys Glu Cys Val Arg Gly Arg Cys Ser Ala Ala 220	225	230	725
tcc ggc gag tgc acc tgc ccg ccc ggc ttc cgc gga gcg cgc tgc gag Ser Gly Glu Cys Thr Cys Pro Pro Gly Phe Arg Gly Ala Arg Cys Glu 235	240	245	773
ctg ccc tgc ccg gca ggc agc cac ggg gtg cag tgc gca cac agc tgt Leu Pro Cys Pro Ala Gly Ser His Gly Val Gln Cys Ala His Ser Cys 250	255	260	821
ggc cgc tgc aaa cac aat gag ccg tgc tct cca gac aca ggc agc tgt Gly Arg Cys Lys His Asn Glu Pro Cys Ser Pro Asp Thr Gly Ser Cys 270	275	280	869
gag tcc tgc gag ccg ggc tgg aac ggg acc cag tgc cag cag ccc tgc Glu Ser Cys Glu Pro Gly Trp Asn Gly Thr Gln Cys Gln Gln Pro Cys 285	290	295	917
ctg cct ggc acc ttt ggc gag agc tgc gaa cag cag tgc cct cac tgc Leu Pro Gly Thr Phe Gly Glu Ser Cys Glu Gln Gln Cys Pro His Cys 300	305	310	965
cga cat ggg gag gcc tgg tgc gaa cca gat act ggc cac tgt cag cgc tgt Arg His Gly Glu Ala Cys Glu Pro Asp Thr Gly His Cys Gln Arg Cys 315	320	325	1013
gac cct ggc tgg ctg ggg ccc agg tgt gaa gac ccc tgc ccc act ggt Asp Pro Gly Trp Leu Gly Pro Arg Cys Glu Asp Pro Cys Pro Thr Gly 330	335	340	1061
acc ttt ggg gaa gac tgt ggc tct acc tgc ccc acc tgt gtt cag ggg Thr Phe Gly Glu Asp Cys Gly Ser Thr Cys Pro Thr Cys Val Gln Gly			1109

350	355	360	
tcc tgt gat act gtg aca ggg gac tgt gtc tgc agt gcc ggc tac tgg Ser Cys Asp Thr Val Thr Gly Asp Cys Val Cys Ser Ala Gly Tyr Trp 365	370	375	1157
ggg ccc agc tgc aac gcc tcc tgc cca gcc ggt ttc cat gga aac aac Gly Pro Ser Cys Asn Ala Ser Cys Pro Ala Gly Phe His Gly Asn Asn 380	385	390	1205
tgc tca gtt cct tgt gaa tgc cca gag gga ctc tgc cac cct gtc tct Cys Ser Val Pro Cys Glu Cys Pro Glu Gly Leu Cys His Pro Val Ser 395	400	405	1253
ggg tcc tgc cag cca ggc tct ggc agt cgg gac act gcc ctc atc gtg Gly Ser Cys Gln Pro Gly Ser Gly Ser Arg Asp Thr Ala Leu Ile Val 410	415	420	1301
ggc agc ctt gtg cct ctg ctg ctc ttc ctg ggt ctt gcc tgc tgt Gly Ser Leu Val Pro Leu Leu Leu Phe Leu Gly Leu Ala Cys Cys 430	435	440	1349
gcc tgc tgc tgg gcc ccc cga tca gac ctc aag gac agg cca gcg Ala Cys Cys Trp Ala Pro Arg Ser Asp Leu Lys Asp Arg Pro Ala 445	450	455	1397
aga gat gga gct acc gtg tcc agg atg aag ctg cag gtc tgg ggg aca Arg Asp Gly Ala Thr Val Ser Arg Met Lys Leu Gln Val Trp Gly Thr 460	465	470	1445
ctg acc agc ttg ggc tcc acg ctg ccc tgc cgt tcc ctc agc tcc cac Leu Thr Ser Leu Gly Ser Thr Leu Pro Cys Arg Ser Leu Ser Ser His 475	480	485	1493
aag cta ccc tgg gtg aca gtc tca cat cac gac ccg gag gtc ccc ttc Lys Leu Pro Trp Val Thr Val Ser His His Asp Pro Glu Val Pro Phe 490	495	500	1541
aac cac agc ttc atc gag ccg ccc tct gcc ggc tgg gcc act gat gac Asn His Ser Phe Ile Glu Pro Pro Ser Ala Gly Trp Ala Thr Asp Asp 510	515	520	1589
tcc ttc tca tcc gát cct gag tct gga gág gca gat gag gtt cct gcc Ser Phe Ser Ser Asp Pro Glu Ser Gly Glu Ala Asp Glu Val Pro Ala 525	530	535	1637
tac tgt gtg cca ccc caa gaa ggg atg gtc cct gtg gcc cag gca ggg Tyr Cys Val Pro Pro Gln Glu Gly Met Val Pro Val Ala Gln Ala Gly 540	545	550	1685
tcg tca gag gcc agc ctg gct gca ggt gct ttc ccg ccc cct gag gac Ser Ser Glu Ala Ser Leu Ala Ala Gly Ala Phe Pro Pro Pro Glu Asp 555	560	565	1733
gcc tcc acg cca ttc gcc atc ccg cgc acc tcc agc cta gct ccg gcc Ala Ser Thr Pro Phe Ala Ile Pro Arg Thr Ser Ser Leu Ala Arg Ala 570	575	580	1781
aag cgg cca tcg gtc tcc ttc gcg gaa ggt acc aag ttt gca cca cag Lys Arg Pro Ser Val Ser Phe Ala Glu Gly Thr Lys Phe Ala Pro Gln 585			1829

590	595	600	
agt cgc cga agc tca ggg gag ctc tcc agc ccg ctc cga aag ccc aag Ser Arg Arg Ser Ser Gly Glu Leu Ser Ser Pro Leu Arg Lys Pro Lys 605	610	615	1877
agg ctc tcc cg ^g ggg gcg cag tcg ggt cct gag ggc cg ^g gaa gcc gaa Arg Leu Ser Arg Gly Ala Gln Ser Gly Pro Glu Gly Arg Glu Ala Glu 620	625	630	1925
gag tcc aca ggc cca gac gaa gca gaa gcc ccc gag tcc ttt ccg gc ^g Glu Ser Thr Gly Pro Asp Glu Ala Glu Ala Pro Glu Ser Phe Pro Ala 635	640	645	1973
gct gcc agt ccc ggg gat tca gcc act ggc cac ccg cg ^g ccc cca ctt Ala Ala Ser Pro Gly Asp Ser Ala Thr Gly His Arg Arg Pro Pro Leu 650	655	660	2021
ggt agc cg ^g aca gt ^g gct gag cac gt ^g gaa gcc att gag ggc agc gtc Gly Ser Arg Thr Val Ala Glu His Val Glu Ala Ile Glu Gly Ser Val 670	675	680	2069
cag gag agc tcg ggc cct gt ^g acc acg atc tac atg ctg gca ggg aag Gln Glu Ser Ser Gly Pro Val Thr Thr Ile Tyr Met Leu Ala Gly Lys 685	690	695	2117
ccc cgc gga tcc gaa ggc cct gtc cgc tct gtc ttc cgc cat ttt ggt Pro Arg Gly Ser Glu Gly Pro Val Arg Ser Val Phe Arg His Phe Gly 700	705	710	2165
agc ttc cag aaa ggc cag gc ^g gaa gcc aag gtc aag agg gcc atc cct Ser Phe Gln Lys Gly Gln Ala Glu Ala Lys Val Lys Arg Ala Ile Pro 715	720	725	2213
aag cct ccg cgc cag gcc ctg aat cg ^g aaa aag ggc agc cct ggc ctt Lys Pro Pro Arg Gln Ala Leu Asn Arg Lys Lys Gly Ser Pro Gly Leu 730	735	740	2261
gcc tct ggc tct gtc ggc cag agc ccc aac tca gcc cca aaa gct ggg Ala Ser Gly Ser Val Gly Gln Ser Pro Asn Ser Ala Pro Lys Ala Gly 750	755	760	2309
ctt cct ggg gcc aca ggg cct atg gca gtc aga cca gag gaa gc ^g gtc Leu Pro Gly Ala Thr Gly Pro Met Ala Val Arg Pro Glu Glu Ala Val 765	770	775	2357
cgg ggg ctg ggg gct ggc acc gag agt tca agg aga gcc cag gag cca Arg Gly Leu Gly Ala Gly Thr Glu Ser Ser Arg Arg Ala Gln Glu Pro 780	785	790	2405
gtc tct ggc tgt ggc tcc cca gaa cag gat ccc cag aag cag gct gaa Val Ser Gly Cys Gly Ser Pro Glu Gln Asp Pro Gln Lys Gln Ala Glu 795	800	805	2453
gag gaa agg cag gag gaa cct gag tat gag aat gtt gta ccc atc tcc Glu Glu Arg Gln Glu Glu Pro Glu Tyr Glu Asn Val Val Pro Ile Ser 810	815	820	2501
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830

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					20				25				30		

Ser	Ser	Pro	Ser	Ala	Glu	Leu	Gln	Cys	Cys	Ala	Gly	Trp	Arg	Gln	Lys
				35			40			45					

Asp	Gln	Glu	Cys	Thr	Ile	Pro	Ile	Cys	Glu	Gly	Pro	Asp	Ala	Cys	Gln
				50			55			60					

Lys	Asp	Glu	Val	Cys	Val	Lys	Pro	Gly	Leu	Cys	Arg	Cys	Lys	Pro	Gly
				65		70			75				80		

Phe	Phe	Gly	Ala	His	Cys	Ser	Ser	Arg	Cys	Pro	Gly	Gln	Tyr	Trp	Gly
				85				90				95			

Pro	Asp	Cys	Arg	Glu	Ser	Cys	Pro	Cys	His	Pro	His	Gly	Gln	Cys	Glu
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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100 105 110

Pro Ala Thr Gly Ala Cys Gln Cys Gln Ala Asp Arg Trp Gly Ala Arg
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Cys Glu Phe Pro Cys Ala Cys Gly Pro His Gly Arg Cys Asp Pro Ala
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Thr Gly Val Cys His Cys Glu Pro Gly Trp Trp Ser Ser Thr Cys Arg
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Gly Ala Cys Val Cys Lys Pro Gly Trp Trp Gly Arg Arg Cys Ser Phe
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Ala Cys Arg Pro Gly Trp Trp Gly Pro Glu Cys Gln Gln Gln Cys Glu
210 215 220

Cys Val Arg Gly Arg Cys Ser Ala Ala Ser Gly Glu Cys Thr Cys Pro
225 230 235 240

Pro Gly Phe Arg Gly Ala Arg Cys Glu Leu Pro Cys Pro Ala Gly Ser
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His Gly Val Gln Cys Ala His Ser Cys Gly Arg Cys Lys His Asn Glu
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Pro Cys Ser Pro Asp Thr Gly Ser Cys Glu Ser Cys Glu Pro Gly Trp
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Asn Gly Thr Gln Cys Gln Gln Pro Cys Leu Pro Gly Thr Phe Gly Glu
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Ser Cys Glu Gln Gln Cys Pro His Cys Arg His Gly Glu Ala Cys Glu
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Pro Asp Thr Gly His Cys Gln Arg Cys Asp Pro Gly Trp Leu Gly Pro
325 330 335

Arg Cys Glu Asp Pro Cys Pro Thr Gly Thr Phe Gly Glu Asp Cys Gly

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Ser Thr Cys Pro Thr Cys Val Gln Gly Ser Cys Asp Thr Val Thr Gly
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Asp Cys Val Cys Ser Ala Gly Tyr Trp Gly Pro Ser Cys Asn Ala Ser
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Cys Pro Ala Gly Phe His Gly Asn Asn Cys Ser Val Pro Cys Glu Cys
385 390 395 400

Pro Glu Gly Leu Cys His Pro Val Ser Gly Ser Cys Gln Pro Gly Ser
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Gly Ser Arg Asp Thr Ala Leu Ile Val Gly Ser Leu Val Pro Leu Leu
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Leu Leu Phe Leu Gly Leu Ala Cys Cys Ala Cys Cys Cys Trp Ala Pro
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Arg Ser Asp Leu Lys Asp Arg Pro Ala Arg Asp Gly Ala Thr Val Ser
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Arg Met Lys Leu Gln Val Trp Gly Thr Leu Thr Ser Leu Gly Ser Thr
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Leu Pro Cys Arg Ser Leu Ser Ser His Lys Leu Pro Trp Val Thr Val
485 490 495

Ser His His Asp Pro Glu Val Pro Phe Asn His Ser Phe Ile Glu Pro
500 505 510

Pro Ser Ala Gly Trp Ala Thr Asp Asp Ser Phe Ser Ser Asp Pro Glu
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Ser Gly Glu Ala Asp Glu Val Pro Ala Tyr Cys Val Pro Pro Gln Glu
530 535 540

Gly Met Val Pro Val Ala Gln Ala Gly Ser Ser Glu Ala Ser Leu Ala
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565 570 575

Pro Arg Thr Ser Ser Leu Ala Arg Ala Lys Arg Pro Ser Val Ser Phe

.

580 585 590

Ala Glu Gly Thr Lys Phe Ala Pro Gln Ser Arg Arg Ser Ser Gly Glu
595 600 605

Leu Ser Ser Pro Leu Arg Lys Pro Lys Arg Leu Ser Arg Gly Ala Gln
610 615 620

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Ala Glu Ala Pro Glu Ser Phe Pro Ala Ala Ala Ser Pro Gly Asp Ser
645 650 655

Ala Thr Gly His Arg Arg Pro Pro Leu Gly Ser Arg Thr Val Ala Glu
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His Val Glu Ala Ile Glu Gly Ser Val Gln Glu Ser Ser Gly Pro Val
675 680 685

Thr Thr Ile Tyr Met Leu Ala Gly Lys Pro Arg Gly Ser Glu Gly Pro
690 695 700

Val Arg Ser Val Phe Arg His Phe Gly Ser Phe Gln Lys Gly Gln Ala
705 710 715 720

Glu Ala Lys Val Lys Arg Ala Ile Pro Lys Pro Pro Arg Gln Ala Leu
725 730 735

Asn Arg Lys Lys Gly Ser Pro Gly Leu Ala Ser Gly Ser Val Gly Gln
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Ser Pro Asn Ser Ala Pro Lys Ala Gly Leu Pro Gly Ala Thr Gly Pro
755 760 765

Met Ala Val Arg Pro Glu Glu Ala Val Arg Gly Leu Gly Ala Gly Thr
770 775 780

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Ile Cys Arg Ile Gly Cys Gln Phe Asn Tyr Gln Ala Ser Ala Thr Cys			96
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aat tct gtt ggg gcg tct gtc gca act gta gtc acc gct gat aat cct			
Asn Ser Val Gly Ala Ser Val Ala Thr Val Val Thr Ala Asp Asn Pro			144
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cga cgt tca gtg tct ttc cct att tat tgt gca agc tta gca tat gca			
Arg Arg Ser Val Ser Phe Pro Ile Tyr Cys Ala Ser Leu Ala Tyr Ala			192
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Ser Ser Lys Tyr Asn Asn Ile Ser Ser Glu Thr Val Gly Ile Ala His			240
65 70 75 80			
ctg gaa cat aga caa tcc ctt gcg aaa gac ttc acg tgt tcc aat gcg			
Leu Glu His Arg Gln Ser Leu Ala Lys Asp Phe Thr Cys Ser Asn Ala			288
85 90 95			
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Ser Gln Glu Thr Phe Gly Gln Arg Ser Phe Val Ile Leu Ala Glu Asn			336
100 105 110			
aca aaa gac act gat gtg atg aaa agt tcc gtg gat aac gtt ttc aga			
Thr Lys Asp Thr Asp Val Met Lys Ser Ser Val Asp Asn Val Phe Arg			384
115 120 125			
aac aag aat agt atc ttc tac cag ctt agt cct ttt gtc aac tct gct			
Asn Lys Asn Ser Ile Phe Tyr Gln Leu Ser Pro Phe Val Asn Ser Ala			432
130 135 140			
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Lys Val Met Asn Val Thr Ser Lys Ser Gln Gln Arg Pro Asn Asp Pro			576
180 185 190			
agt gat cct gtc aag gtc aca aat ttc ctg cct caa gca att gca gga			
Ser Asp Pro Val Lys Val Thr Asn Phe Leu Pro Gln Ala Ile Ala Gly			624
195 200 205			
gcg aac gcc tat tct gac att ctg ctt gtg att aat tat aac gtg tct			
			672

Ala Asn Ala Tyr Ser Asp Ile Leu Leu Val Ile Asn Tyr Asn Val Ser
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 acc att acc gac aac gat gct acc gaa atc aaa agt gca tta gaa aaa 720
 Thr Ile Thr Asp Asn Asp Ala Thr Glu Ile Lys Ser Ala Leu Glu Lys
 225 230 235 240
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 Gln Arg Ser Arg Leu Tyr Ile Leu Phe Val Gln Thr Tyr Phe Asn Tyr
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 Thr Asp Thr Tyr Tyr Ala Met Asn Lys Leu Ala Ile Ala Ser Gly Gly
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 Gln Tyr Phe Pro Leu Leu Val Ala Asn Asp Ile Val Ala Lys Ala Tyr
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Leu Asn Gly Glu Thr Ile Ser Arg Thr Phe Pro Ile Thr Cys Leu Gly			
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gca gat gta gga gac tgc ctc aac ggt gga aat cta aca gat gct ggt			1440
Ala Asp Val Gly Asp Cys Leu Asn Gly Gly Asn Leu Thr Asp Ala Gly			
465	470	475	480
tca tgc att tgc cca tta cag tgg aca gga act aac tgt caa gct ccg			1488
Ser Cys Ile Cys Pro Leu Gln Trp Thr Gly Thr Asn Cys Gln Ala Pro			
485	490	495	
caa tgc ttg aat gga ggt aca ctg aaa act gat gac act tgt gca tgt			1536
Gln Cys Leu Asn Gly Gly Thr Leu Lys Thr Asp Asp Thr Cys Ala Cys			
500	505	510	
ctc gat agt ttc aaa gga gat ttt tgt gaa aca agt acc tct gtt tgc			1584
Leu Asp Ser Phe Lys Gly Asp Phe Cys Glu Thr Ser Thr Ser Val Cys			
515	520	525	
gct gga gct ccg aca tct ccg gac tat cgc tct gaa ctg agt tca ttg			1632
Ala Gly Ala Pro Thr Ser Pro Asp Tyr Arg Ser Glu Leu Ser Ser Leu			
530	535	540	
gta att gtt gct gat gtc aac gca tta tca aca agt agt cta agc aat			1680
Val Ile Val Ala Asp Val Asn Ala Leu Ser Thr Ser Ser Leu Ser Asn			
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acg gta ccc gga ata act gga gtg cca att act gtc att cta tat ggc			1728
Thr Val Pro Gly Ile Thr Gly Val Pro Ile Thr Val Ile Leu Tyr Gly			
565	570	575	
gat gga aat gct cca aga att gtt cag tct aca act aac agt gag cat			1776
Asp Gly Asn Ala Pro Arg Ile Val Gln Ser Thr Thr Asn Ser Glu His			
580	585	590	
ctc tcc gag gta tta ggt gca ccg acg ggt acc aca act tca cca agt			1824
Leu Ser Glu Val Leu Gly Ala Pro Thr Gly Thr Thr Ser Pro Ser			
595	600	605	
tca acg gct tca cca gca cca tcc gca agt gat atg tat aag gct ctg			1872
Ser Thr Ala Ser Pro Ala Pro Ser Ala Ser Asp Met Tyr Lys Ala Leu			
610	615	620	
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Asn Leu Ala Leu Asp Asn Gln Leu Thr Asp Arg Ala Phe Val Ile Val			
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Tyr Thr Ser Asn Ser Asn Val Thr Ile Asp Pro Asp Phe Leu Ile Arg			
645	650	655	
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Leu Ala Val Arg Arg Ala Glu Val Arg Val Leu Ser Thr Ser Gly Thr			
660	665	670	
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Glu Ser Gln Asn Ser Ile Thr Leu Ser Leu Val Gly Asn Gly Ile Pro			
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Ile Ala Ile Asn Gly Ala Lys Asp Phe Glu Asn Tyr Leu Thr Tyr Tyr			
690	695	700	
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705	710	715	720
cga gtg ttc aat gtg ttc caa aca ggt caa ttc tac aac tct acg caa			2208
Arg Val Phe Asn Val Phe Gln Thr Gly Gln Phe Tyr Asn Ser Thr Gln			
725	730	735	
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Ile Ser Ile Pro Ala Asp Ser Thr Phe Asp Asn Ala Lys Pro Asn Leu			
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Phe Val His Val Tyr Glu Gly Arg Ile Asn Tyr Ser Asp Pro Ser Thr			
755	760	765	
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770	775	780	
ccc aca aaa cct atc aac tta att gtg aat aat aat ggc acg acc ggt			2400
Pro Thr Lys Pro Ile Asn Leu Ile Val Asn Asn Asn Gly Thr Thr Gly			
785	790	795	800
tac tac gca atc gaa gtc atc gga tat cta aag aca tca tat ggt ttc			2448
Tyr Tyr Ala Ile Glu Val Ile Gly Tyr Leu Lys Thr Ser Tyr Gly Phe			
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Asn Ile Asp Asn Ala Asn Gly Ser Asn Glu Asn Leu Asn Ser Gly Val			
820	825	830	
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Val Tyr Asn Gln Gln Asn Thr Leu Asn Ile Tyr Ser Ala Pro Phe Ser			
835	840	845	
cag ctt cct aaa act gat cca tca aac ttc cca tat ctc aca ctt gga			2592
Gln Leu Pro Lys Thr Asp Pro Ser Asn Phe Pro Tyr Leu Thr Leu Gly			
850	855	860	
gaa att gcc agt aac gga aca gtt tta cct gca aca aca gtt ttg ttt			2640
Glu Ile Ala Ser Asn Gly Thr Val Leu Pro Ala Thr Thr Val Leu Phe			
865	870	875	880
aca aga aaa agt ggt gcg tcc tgt ttt tac agt cac ttc acc gtt ctt			2688
Thr Arg Lys Ser Gly Ala Ser Cys Phe Tyr Ser His Phe Thr Val Leu			
885	890	895	
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Asp Val Cys Ser Gln Ser Thr Thr Ile Gly Tyr Gln Ala Gln Leu Thr			
900	905	910	
aca aga aca agc acc ttg aca aat agg att caa caa ttt gtg ctg aca			2784
Thr Arg Thr Ser Thr Leu Thr Asn Arg Ile Gln Gln Phe Val Leu Thr			
915	920	925	
tgc ttt aaa aca agt tat gca aat aat gat act tcc tgc cat gga cat			2832

Cys	Phe	Lys	Thr	Ser	Tyr	Ala	Asn	Asn	Asp	Thr	Ser	Cys	His	Gly	His	
930																
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945																960
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Asp	Cys	Thr	Glu	Pro	Ala	Cys	Val	Asn	Gly	Gly	Val	Arg	Asp	Gly	Ser	
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Val	Cys	Arg	Cys	Pro	Val	Arg	Phe	Tyr	Gly	Leu	Arg	Cys	Glu	Glu	Cys	
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gag	tct	agg	caa	aat	ctg	cct	ata	aga	aaa	tta	tcc	aca	cct	aat	tac	3024
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1005																
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																1020
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																1035
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Ser	Thr	Thr	Met	Leu	Pro	Ser	Thr	Ser	Thr	Val	Ala	Pro	Ser	Thr		
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Ser	Gln	Ser	Thr	Ile	Val	Ser	Thr	Val	Thr	Thr	Gln	Ser	Pro	Ser		
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cct	tca	aca	aca	gct	cca	aaa	caa	gtc	cg	gct	gct	gca	ttc	att		3249
Pro	Ser	Thr	Thr	Ala	Pro	Lys	Gln	Val	Arg	Ala	Ala	Ala	Phe	Ile		
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aaa	tgc	att	gca	cag	tac	ttc	aag	aca	ttt	ggc	tat	agc	cat	tac		3339
Lys	Ser	Ile	Ala	Gln	Tyr	Phe	Lys	Thr	Phe	Gly	Tyr	Ser	His	Tyr		
1100																1105
																1110
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Ile	Met	Leu	Thr	Asn	Asn	Leu	Asn	Gly	Ser	Leu	Gln	Leu	Asn	Asn		
1115																1120
																1125
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Gly	Ser	Leu	Leu	Phe	Glu	Asp	Phe	Gln	Gln	Tyr	Ser	Asp	Glu	Ser		
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																1140
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																1155
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Tyr	Ser	Ala	Phe	Ala	Lys	Asn	Ala	Asn	Gln	Thr	Ile	Val	Thr	Ser	
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Leu	Gln	Lys	Phe	Ser	Thr	Asp	Val	Thr	Thr	Ala	Arg	Asp	Tyr	Tyr	
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Asn	Glu	Leu	Pro	Pro	Lys	Pro	Asp	Gln	Leu	Ser	Cys	Val	Tyr	Gly	
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Leu	Gln	Ser	Asn	Ile	Lys	Ile	Ala	Ile	Asp	Arg	Ser	Asn	Ser	Ser	
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Phe	Pro	Tyr	Tyr	Asp	Ala	Ile	Ala	Lys	Ile	Ala	Thr	Phe	Cys	Pro	
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Arg	Arg	Ser	Val	Ser	Phe	Pro	Ile	Tyr	Cys	Ala	Ser	Leu	Ala	Tyr	Ala
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Leu	Glu	His	Arg	Gln	Ser	Leu	Ala	Lys	Asp	Phe	Thr	Cys	Ser	Asn	Ala
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Gly Pro Val Pro Ala Ser Val Thr Val Thr Gly Ile Asn Val Thr Gln

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Thr Lys Asp Thr Asp Val Met Lys Ser Ser Val Asp Asn Val Phe Arg
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Pro Pro Gln Arg Tyr Ala Asn Phe Phe Ala Val Leu Asn Lys Cys Ser
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Glu Thr Ala Gln Thr Glu Gln Ser Ser Asp Tyr Gly Thr Phe Leu Thr
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Lys Val Met Asn Val Thr Ser Lys Ser Gln Gln Arg Pro Asn Asp Pro
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Ser Asp Pro Val Lys Val Thr Asn Phe Leu Pro Gln Ala Ile Ala Gly
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Thr Ile Thr Asp Asn Asp Ala Thr Glu Ile Lys Ser Ala Leu Glu Lys
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Gln Arg Ser Arg Leu Tyr Ile Leu Phe Val Gln Thr Tyr Phe Asn Tyr
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Thr Asp Thr Tyr Tyr Ala Met Asn Lys Leu Ala Ile Ala Ser Gly Gly
260 265 270

Val Ala Ile Arg Val Asn Thr Tyr Asp Asp Leu Ser Thr Phe Phe Ala
275 280 285

Gln Tyr Phe Pro Leu Leu Val Ala Asn Asp Ile Val Ala Lys Ala Tyr
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Ala Glu Asn Pro Arg Pro Gly Val Ala Leu Asn Asn Val Asn Leu Leu
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Ala Gln Gln Tyr Val Leu Leu Val Thr Asn Glu Asp Ser Leu Gly Asp
325 330 335

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345

350

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Tyr Ala Asn Thr Lys Asn Tyr Ala Trp Ala Cys Ser Ile Ser Glu Ile
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Ser Cys Ile Cys Pro Leu Gln Trp Thr Gly Thr Asn Cys Gln Ala Pro
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Gln Cys Leu Asn Gly Gly Thr Leu Lys Thr Asp Asp Thr Cys Ala Cys
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Val Ile Val Ala Asp Val Asn Ala Leu Ser Thr Ser Ser Leu Ser Asn
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Thr Val Pro Gly Ile Thr Gly Val Pro Ile Thr Val Ile Leu Tyr Gly
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Asp Gly Asn Ala Pro Arg Ile Val Gln Ser Thr Thr Asn Ser Glu His

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Tyr Thr Ser Asn Ser Asn Val Thr Ile Asp Pro Asp Phe Leu Ile Arg		
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Leu Ala Val Arg Arg Ala Glu Val Arg Val Leu Ser Thr Ser Gly Thr		
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Glu Ser Gln Asn Ser Ile Thr Leu Ser Leu Val Gly Asn Gly Ile Pro		
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Ile Ala Ile Asn Gly Ala Lys Asp Phe Glu Asn Tyr Leu Thr Tyr Tyr		
690	695	700
Val Val Pro Leu Phe Gln Ser Leu Gln Tyr Gln Val Asn Thr Pro Gln		
705	710	715
Arg Val Phe Asn Val Phe Gln Thr Gly Gln Phe Tyr Asn Ser Thr Gln		
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Ile Ser Ile Pro Ala Asp Ser Thr Phe Asp Asn Ala Lys Pro Asn Leu		
740	745	750
Phe Val His Val Tyr Glu Gly Arg Ile Asn Tyr Ser Asp Pro Ser Thr		
755	760	765
Asn Gly Asn Glu Val Gly Asn Ser Thr Ile Tyr Phe Leu Pro Tyr Asp		
770	775	780
Pro Thr Lys Pro Ile Asn Leu Ile Val Asn Asn Asn Gly Thr Thr Gly		
785	790	795
Tyr Tyr Ala Ile Glu Val Ile Gly Tyr Leu Lys Thr Ser Tyr Gly Phe		
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Asn Ile Asp Asn Ala Asn Gly Ser Asn Glu Asn Leu Asn Ser Gly Val		

820

825

830

Val Tyr Asn Gln Gln Asn Thr Leu Asn Ile Tyr Ser Ala Pro Phe Ser
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Gln Leu Pro Lys Thr Asp Pro Ser Asn Phe Pro Tyr Leu Thr Leu Gly
850 855 860

Glu Ile Ala Ser Asn Gly Thr Val Leu Pro Ala Thr Thr Val Leu Phe
865 870 875 880

Thr Arg Lys Ser Gly Ala Ser Cys Phe Tyr Ser His Phe Thr Val Leu
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Asp Val Cys Ser Gln Ser Thr Thr Ile Gly Tyr Gln Ala Gln Leu Thr
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Thr Arg Thr Ser Thr Leu Thr Asn Arg Ile Gln Gln Phe Val Leu Thr
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Cys Phe Lys Thr Ser Tyr Ala Asn Asn Asp Thr Ser Cys His Gly His
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Gly Ser Pro Met Ala Thr Cys Ala Cys Asn Ala Asp Phe Gly Gly Ile
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Val Cys Arg Cys Pro Val Arg Phe Tyr Gly Leu Arg Cys Glu Glu Cys
980 985 990

Glu Ser Arg Gln Asn Leu Pro Ile Arg Lys Leu Ser Thr Pro Asn T
 995 1000 1005

Gly Gln Ile Thr Asp Lys Leu Leu Val Lys Lys Phe Ile Gln Phe
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Ile Met Leu Thr Asn Asn Leu Asn Gly Ser Leu Gln Leu Asn Asn
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Gly Ser Leu Leu Phe Glu Asp Phe Gln Gln Tyr Ser Asp Glu Ser
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Met Ile Met Ser Lys Leu Pro Leu Tyr Trp Ser Leu Arg Ala Thr
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Met Asn Ile Phe Tyr Ala Thr Gln Ile Gly Leu Gly Asp Glu Asp
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Leu Gln Lys Phe Ser Thr Asp Val Thr Thr Ala Arg Asp Tyr Tyr
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Ser Gln Tyr Thr Ser Met Leu Ser Phe Gln Val Val Gly Ser Gln
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Val Thr Asp Asp Asp Tyr Leu Thr Leu Leu Lys Leu Asn Thr Thr
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 Gln Phe Val Gln Met Ile Leu Asn Ser Leu Ile Asn Lys Ser Lys Ser
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 Ser Met Phe Gln Val Arg Thr Leu Arg Glu Leu Leu Trp Gly Tyr Arg
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 Asp Pro Phe Leu Ser Leu Val Pro Tyr Pro Val Thr Thr Thr Val Gly
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Cys Ala Gly Trp Arg Gln Lys Asp Gln Glu Cys Thr Ile Pro Ile Cys		
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Glu Gly Pro Asp Ala Cys Gln Lys Asp Glu Val Cys Val Lys Pro Gly		
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Leu Cys Arg Cys Lys Pro Gly Phe Phe Gly Ala His Cys Ser Ser Arg		
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Cys Pro Gly Gln Tyr Trp Gly Pro Asp Cys Arg Glu Ser Cys Pro Cys		
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105		
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His Pro His Gly Gln Cys Glu Pro Ala Thr Gly Ala Cys Gln Cys Gln		
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Ala Asp Arg Trp Gly Ala Arg Cys Glu Phe Pro Cys Ala Cys Gly Pro		
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Trp Trp Ser Ser Thr Cys Arg Arg Pro Cys Gln Cys Asn Thr Ala Ala		
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Thr Phe Gly Glu Asp Cys Gly Ser Thr Cys Pro Thr Cys Val Gln Gly	
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Ser Cys Asp Thr Val Thr Gly Asp Cys Val Cys Ser Ala Gly Tyr Trp	
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ctt cct ggg gcc aca ggg cct atg gca gtc aga cca gag gaa gcg gtc Leu Pro Gly Ala Thr Gly Pro Met Ala Val Arg Pro Glu Glu Ala Val	2357
765 770 775	
cgg ggg ctg ggg gct ggc acc gag agt tca agg aga gcc cag gag cca Arg Gly Leu Gly Ala Gly Thr Glu Ser Ser Arg Arg Ala Gln Glu Pro	2405
780 785 790	
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35 40 45

Asp Gln Glu Cys Thr Ile Pro Ile Cys Glu Gly Pro Asp Ala Cys Gln
50 55 60

Lys Asp Glu Val Cys Val Lys Pro Gly Leu Cys Arg Cys Lys Pro Gly
65 70 75 80

Phe Phe Gly Ala His Cys Ser Ser Arg Cys Pro Gly Gln Tyr Trp Gly
85 90 95

Pro Asp Cys Arg Glu Ser Cys Pro Cys His Pro His Gly Gln Cys Glu
100 105 110

Pro Ala Thr Gly Ala Cys Gln Cys Gln Ala Asp Arg Trp Gly Ala Arg
115 120 125

Cys Glu Phe Pro Cys Ala Cys Gly Pro His Gly Arg Cys Asp Pro Ala
130 135 140

Thr Gly Val Cys His Cys Glu Pro Gly Trp Trp Ser Ser Thr Cys Arg
145 150 155 160

Arg Pro Cys Gln Cys Asn Thr Ala Ala Ala Arg Cys Glu Gln Ala Thr
165 170 175

Gly Ala Cys Val Cys Lys Pro Gly Trp Trp Gly Arg Arg Cys Ser Phe
180 185 190

Arg Cys Asn Cys His Gly Ser Pro Cys Glu Gln Asp Ser Gly Arg Cys
195 200 205

Ala Cys Arg Pro Gly Trp Trp Gly Pro Glu Cys Gln Gln Cys Glu
210 215 220

Cys Val Arg Gly Arg Cys Ser Ala Ala Ser Gly Glu Cys Thr Cys Pro
225 230 235 240

Pro Gly Phe Arg Gly Ala Arg Cys Glu Leu Pro Cys Pro Ala Gly Ser
245 250 255

His Gly Val Gln Cys Ala His Ser Cys Gly Arg Cys Lys His Asn Glu
260 265 270

Pro Cys Ser Pro Asp Thr Gly Ser Cys Glu Ser Cys Glu Pro Gly Trp
275 280 285

Asn Gly Thr Gln Cys Gln Gln Pro Cys Leu Pro Gly Thr Phe Gly Glu
290 295 300

Ser Cys Glu Gln Gln Cys Pro His Cys Arg His Gly Glu Ala Cys Glu
305 310 315 320

Pro Asp Thr Gly His Cys Gln Arg Cys Asp Pro Gly Trp Leu Gly Pro
325 330 335

Arg Cys Glu Asp Pro Cys Pro Thr Gly Thr Phe Gly Glu Asp Cys Gly
340 345 350

Ser Thr Cys Pro Thr Cys Val Gln Gly Ser Cys Asp Thr Val Thr Gly
355 360 365

Asp Cys Val Cys Ser Ala Gly Tyr Trp Gly Pro Ser Cys Asn Ala Ser
370 375 380

Cys Pro Ala Gly Phe His Gly Asn Asn Cys Ser Val Pro Cys Glu Cys
385 390 395 400

Pro Glu Gly Leu Cys His Pro Val Ser Gly Ser Cys Gln Pro Gly Ser
405 410 415

Gly Ser Arg Asp Thr Ala Leu Ile Ala Gly Ser Leu Val Pro Leu Leu
420 425 430

Leu Leu Phe Leu Gly Leu Ala Cys Cys Ala Cys Cys Cys Trp Ala Pro
435 440 445

Arg Ser Asp Leu Lys Asp Arg Pro Ala Arg Asp Gly Ala Thr Val Ser
450 455 460

Arg Met Lys Leu Gln Val Trp Gly Thr Leu Thr Ser Leu Gly Ser Thr
465 470 475 480

Leu Pro Cys Arg Ser Leu Ser Ser His Lys Leu Pro Trp Val Thr Val
485 490 495

Ser His His Asp Pro Glu Val Pro Phe Asn His Ser Phe Ile Glu Pro
500 505 510

Pro Ser Ala Gly Trp Ala Thr Asp Asp Ser Phe Ser Ser Asp Pro Glu
515 520 525

Ser Gly Glu Ala Asp Glu Val Pro Ala Tyr Cys Val Pro Pro Gln Glu
530 535 540

Gly Met Val Pro Val Ala Gln Ala Gly Ser Ser Glu Ala Ser Leu Ala
545 550 555 560

Ala Gly Ala Phe Pro Pro Pro Glu Asp Ala Ser Thr Pro Phe Ala Ile
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595 600 605

Leu Ser Ser Pro Leu Arg Lys Pro Lys Arg Leu Ser Arg Gly Ala Gln
610 615 620

Ser Gly Pro Glu Gly Arg Glu Ala Glu Glu Ser Thr Gly Pro Glu Glu
625 630 635 640

Ala Glu Ala Pro Glu Ser Phe Pro Ala Ala Ala Ser Pro Gly Asp Ser
645 650 655

Ala Thr Gly His Arg Arg Pro Pro Leu Gly Gly Arg Thr Val Ala Glu
660 665 670

His Val Glu Ala Ile Glu Gly Ser Val Gln Glu Ser Ser Gly Pro Val
675 680 685

Thr Thr Ile Tyr Met Leu Ala Gly Lys Pro Arg Gly Ser Glu Gly Pro
690 695 700

Val Arg Ser Val Phe Arg His Phe Gly Ser Phe Gln Lys Gly Gln Ala
705 710 715 720

Glu Ala Lys Val Lys Arg Ala Ile Pro Lys Pro Pro Arg Gln Ala Leu
725 730 735

Asn Arg Lys Lys Gly Ser Pro Gly Leu Ala Ser Gly Ser Val Gly Gln	740	745	750
Ser Pro Asn Ser Ala Pro Lys Ala Gly Leu Pro Gly Ala Thr Gly Pro	755	760	765
Met Ala Val Arg Pro Glu Glu Ala Val Arg Gly Leu Gly Ala Gly Thr	770	775	780
Glu Ser Ser Arg Arg Ala Gln Glu Pro Val Ser Gly Cys Gly Ser Pro	785	790	795
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Asp Asp Lys Met Lys Pro Ala Asn Asp Glu Pro Asp Gln Lys Ser Cys			
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Gly Lys Lys Pro Lys Gly Leu His Leu Leu Ser Ser Pro Trp Trp Phe			
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cct gct gct atg act ctg gtc atc ctc tgc ctg gtg ttg tca gtg acc			200
Pro Ala Ala Met Thr Leu Val Ile Leu Cys Leu Val Leu Ser Val Thr			
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ctt att gta cag tgg aca caa tta cgc cag gta tct gac ctc tta aaa			248
Leu Ile Val Gln Trp Thr Gln Leu Arg Gln Val Ser Asp Leu Leu Lys			
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Gln Tyr Gln Ala Asn Leu Thr Gln Gln Asp Arg Ile Leu Glu Gly Gln			
70	75	80	
atg tta gcc cag cag aag gca gaa aac gct tca cag gaa tca aag aag			344
Met Leu Ala Gln Gln Lys Ala Glu Asn Ala Ser Gln Glu Ser Lys Lys			
85	90	95	
gaa ctg aaa gga aag ata gac acc ctc acc cag aag ctg aat gag aaa			392
Glu Leu Lys Gly Lys Ile Asp Thr Leu Thr Gln Lys Leu Asn Glu Lys			
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tcc aaa gag cag gag gag ctt cta cag aag aat cag aac ctc caa gaa	440
Ser Lys Glu Gln Glu Glu Leu Leu Gln Lys Asn Gln Asn Leu Gln Glu	
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gcc ctg caa aga gct gca aac tct tca gag gag tcc cag aga gaa ctc	488
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Lys Gly Lys Ile Asp Thr Ile Thr Arg Lys Leu Asp Glu Lys Ser Lys	
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gag cag gag gag ctt ctg cag atg att cag aac ctc caa gaa gcc ctg	584
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cag aga gct gca aac tct tca gag gag tcc cag aga gaa ctc aag gga	632
Gln Arg Ala Ala Asn Ser Ser Glu Glu Ser Gln Arg Glu Leu Lys Gly	
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aag ata gac acc ctc acc ttg aag ctg aac gag aaa tcc aaa gag cag	680
Lys Ile Asp Thr Leu Thr Leu Lys Leu Asn Glu Lys Ser Lys Glu Gln	
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Glu Glu Leu Leu Gln Lys Asn Gln Asn Leu Gln Glu Ala Leu Gln Arg	
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gct gca aac ttt tca ggt cct tgt cca caa gac tgg ctc tgg cat aaa	776
Ala Ala Asn Phe Ser Gly Pro Cys Pro Gln Asp Trp Leu Trp His Lys	
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gaa aac tgt tac ctc ttc cat ggg ccc ttt agc tgg gaa aaa aac cg ^g	824
Glu Asn Cys Tyr Leu Phe His Gly Pro Phe Ser Trp Glu Lys Asn Arg	
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Gln Thr Cys Gln Ser Leu Gly Gly Gln Leu Leu Gln Ile Asn Gly Ala	
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gat gat ttg aca ttc atc tta caa gca att tcc cat acc acc tcc ccg	920
Asp Asp Leu Thr Phe Ile Leu Gln Ala Ile Ser His Thr Thr Ser Pro	
280	285
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ttc tgg att gga ttg cat cg ^g aag aag cct ggc caa cca tgg cta tgg	968
Phe Trp Ile Gly Leu His Arg Lys Lys Pro Gly Gln Pro Trp Leu Trp	
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gag aat gga act cct ttg aat ttt caa ttc ttt aag acc agg ggc gtt	1016
Glu Asn Gly Thr Pro Leu Asn Phe Gln Phe Phe Lys Thr Arg Gly Val	
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Ser Leu Gln Leu Tyr Ser Ser Gly Asn Cys Ala Tyr Leu Gln Asp Gly	
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Ala Val Phe Ala Glu Asn Cys Ile Leu Ile Ala Phe Ser Ile Cys Gln	
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Lys Lys Thr Asn His Leu Gln Ile
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35 40 45

Ser Val Thr Leu Ile Val Gln Trp Thr Gln Leu Arg Gln Val Ser Asp
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Leu Leu Lys Gln Tyr Gln Ala Asn Leu Thr Gln Gln Asp Arg Ile Leu
65 70 75 80

Glu Gly Gln Met Leu Ala Gln Gln Lys Ala Glu Asn Ala Ser Gln Glu
85 90 95

Ser Lys Lys Glu Leu Lys Gly Lys Ile Asp Thr Leu Thr Gln Lys Leu
100 105 110

Asn Glu Lys Ser Lys Glu Gln Glu Glu Leu Leu Gln Lys Asn Gln Asn
115 120 125

Leu Gln Glu Ala Leu Gln Arg Ala Ala Asn Ser Ser Glu Glu Ser Gln
130 135 140

Arg Glu Leu Lys Gly Lys Ile Asp Thr Ile Thr Arg Lys Leu Asp Glu
145 150 155 160

Lys Ser Lys Glu Gln Glu Glu Leu Leu Gln Met Ile Gln Asn Leu Gln
165 170 175

Glu Ala Leu Gln Arg Ala Ala Asn Ser Ser Glu Glu Ser Gln Arg Glu
180 185 190

Leu Lys Gly Lys Ile Asp Thr Leu Thr Leu Lys Leu Asn Glu Lys Ser
195 200 205

Lys Glu Gln Glu Glu Leu Leu Gln Lys Asn Gln Asn Leu Gln Glu Ala
210 215 220

Leu Gln Arg Ala Ala Asn Phe Ser Gly Pro Cys Pro Gln Asp Trp Leu
225 230 235 240

Trp His Lys Glu Asn Cys Tyr Leu Phe His Gly Pro Phe Ser Trp Glu
245 250 255

Lys Asn Arg Gln Thr Cys Gln Ser Leu Gly Gly Gln Leu Leu Gln Ile
260 265 270

Asn Gly Ala Asp Asp Leu Thr Phe Ile Leu Gln Ala Ile Ser His Thr
275 280 285

Thr Ser Pro Phe Trp Ile Gly Leu His Arg Lys Lys Pro Gly Gln Pro
290 295 300

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Asn Asn
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